United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with University of Georgia, College of Agricultural and Environmental Sciences, Agricultural Experiment Stations

Soil Survey of Lincoln and Wilkes Counties, Georgia

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

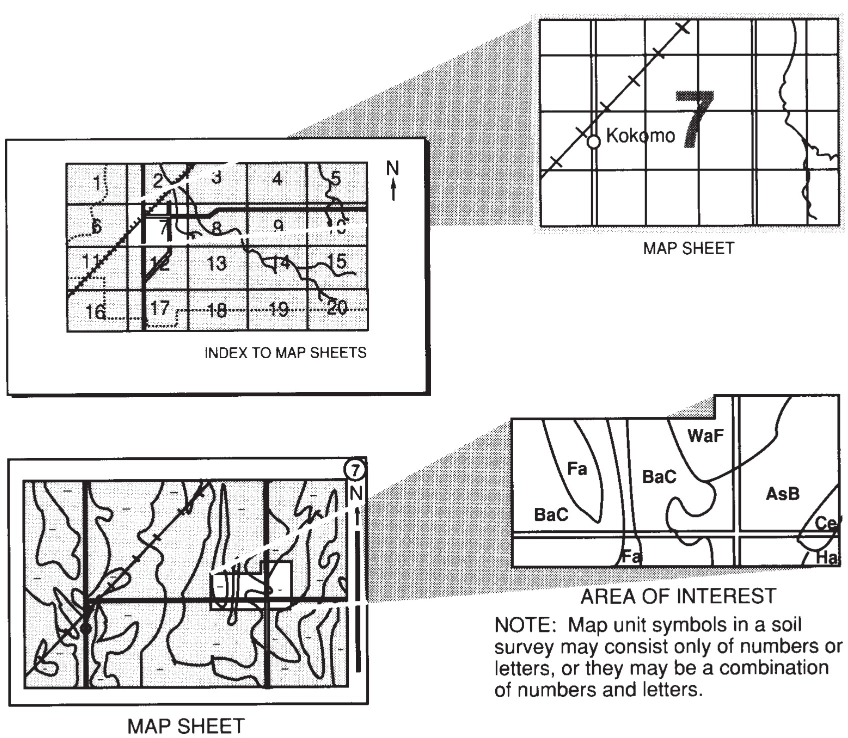
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the agricultural research services, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 1994. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This soil survey was made cooperatively by the Natural Resources Conservation Service and the University of Georgia, College of Agricultural and Environmental Sciences, Agricultural Experiment Stations. It is part of the technical assistance furnished to the Broad River and Lincoln County Soil and Water Conservation Districts.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Livestock production in an area of Pacolet fine gravelly loamy coarse sand, 2 to 6 percent slopes.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2006

Foreword

This soil survey contains information that affects land use planning in Lincoln and Wilkes Counties. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various decisions for land use or land treatment. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of Lincoln and Wilkes Counties, Georgia

By Walter G. George, Natural Resources Conservation Service

Soils surveyed by Walter G. George, Louie W. Frost, Jr., Richard S. Joslyn, and Thomas G. Macfie, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
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LINCOLN AND WILKES COUNTIES are in the northeastern part of Georgia (fig. 1). They make up a total of about 732 squares miles, or 468,500 acres. Lincoln County makes up 165,300 acres, and Wilkes County makes up 303,200 acres. Lincolnton is the county seat of Lincoln County, and Washington is the county seat of Wilkes County.

Lincoln and Wilkes Counties are in the Southern Piedmont Major Land Resource Area. The bedrock of the area consists of igneous and metamorphic crystalline rock.

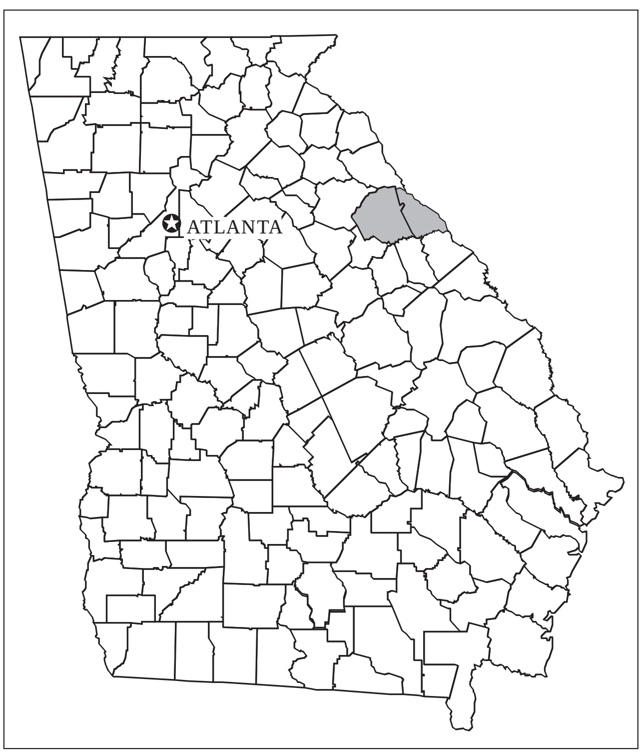

Figure 1.—Location of Lincoln and Wilkes Counties in Georgia.

Most of the soils on the broad, gently sloping summits and strongly sloping or moderately steep side slopes have a loamy surface layer and a clayey subsoil. These soils are dominantly well drained.

The lowest elevation in the survey area, about 330 feet, is located along the Clarks Hill Reservoir. The highest elevation, about 890 feet, is located at Graves Mountain in Lincoln County. Elevations commonly range from 400 to 650 feet on the ridgetops and from 350 to 450 feet in the valleys near the streams.

This soil survey updates the survey of Wilkes County published in 1915 *(4)*. It provides additional information and has larger maps, which show the soils in greater detail. No previous soil survey has been published for Lincoln County.

General Nature of the Survey Area

This section gives general information about Lincoln and Wilkes Counties. It describes the history and settlement, farming, water resources, and climate.

History and Settlement

By proclamation of the Royal Governor on June 11, 1773, prospective settlers along the Atlantic Seaboard were offered newly ceded lands in the northeastern part of Georgia. This land, referred to as “The New Purchase,” had been acquired by treaty from the Creek and Cherokee Indians. Settlers came from North Carolina, South Carolina, and Virginia.

Wilkes County was one of the original counties established from the newly ceded land. It was established in 1777 and included present-day Wilkes, Lincoln, and Elbert Counties and parts of Hart, Oglethorpe, Taliaferro, Warren, McDuffie, and Madison Counties. Wilkes County was the eighth county established in Georgia. It was named after John Wilkes, an Englishman who supported the Colonists’ cause in the British House of Commons.

Washington is the county seat of Wilkes County. It was named after George Washington. It was originally established in 1774 as Fort Heard, a frontier defense. The town also played an important historical role during the Civil War. Confederate President Jefferson Davis held his last cabinet meeting and officially dissolved the Confederacy in Washington on May 5, 1865.

On February 20, 1796, the State Legislature established Lincoln County, the 24th county in Georgia. The county was named after Major General Benjamin Lincoln, Chief Commander of the Southern Department of the Continental Army during the Revolutionary War. Benjamin Lincoln had received the sword of surrender from British Lord Cornwallis at Yorktown, Virginia.

Lincolnton is the county seat of Lincoln County. It was established as the county’s first town, by a Georgia Legislature appointed council, on February 2, 1798. Early communities in Lincoln County included Lisbon and Graball, which were villages along the Savannah River that had public warehouses for receiving and inspecting tobacco. The villages were abandoned after the Savannah River was dammed for hydroelectric power.

Settlers of Lincoln and Wilkes Counties prospered from farming, specializing initially in tobacco and later in cotton production. The first cotton gin was developed by Eli Whitney on a Wilkes County plantation in 1793. Major commercial transportation was available because of the easy access to the Broad, Little, and Savannah Rivers and Dry Fork Creek.

The cotton industry was the driving economic force of the survey area from the 1790’s through the 1930’s. Today, the main industries in Lincoln and Wilkes Counties are timber production and the manufacture of other wood products, light industrial

manufacturing, and dairy farming. Tourism also contributes to the local economy. Visitors are attracted to the antebellum homes of Washington. The Clarks Hill Reservoir provides opportunities for fishing, boating, and recreational activities.

Farming

The first European settlers of Lincoln and Wilkes Counties were primarily subsistence farmers who raised livestock and grew corn, wheat, potatoes, and other vegetables. The first cash crop was tobacco, which was grown for export to England. After the invention of the cotton gin in 1793, cotton replaced tobacco as the main cash crop.

In 1850, the average size of a farm in the survey area was 400 to 500 acres and the average cotton production per farm was 23 bales, or about 1 bale per 20 acres. Cotton was the primary commodity throughout the 1800’s. After the Civil War, the large plantations in Lincoln and Wilkes Counties were divided into 40-acre sharecropper tracts. About half of each tract was devoted to cotton. By the late 1920’s, over 60 percent of the agricultural land in the counties was being farmed by tenants rather than owners. By 1920, cotton production reached its peak, about half a bale per acre, because of the increased use of fertilizer.

The epidemic-level boll weevil infestations of the 1920’s and the economic depression of the 1920’s and 1930’s led to the decline of the cotton industry. Lower economic returns on acreage planted to cotton resulted in extensive overuse and misuse of cropland. This resulted in lower levels of soil fertility, further decreased crop yields, and eventually massive soil erosion. Many acres of cropland were abandoned because they were “cropped out.” In 1935, the U.S. Congress passed the Soil Erosion Act, which recognized the need for soil protection to prevent the deterioration of cropland soils.

From 1930 until the early 1960’s, cotton production continued to decline. This resulted in greater crop diversification. Acreages of corn and wheat increased, and the commercial production of many types of livestock also increased. During the 1940’s and 1950’s, large portions of cropland were converted to areas of pasture grass or pine trees. Many row-crop farmers switched to dairy farming. Much farmland was purchased by large pulpwood and timber companies during the 1950’s, 1960’s, and 1970’s. From 1960 until the early 1980’s, most of the remaining row-crop farmers concentrated on the production of soybeans and grain sorghum.

By 1990, almost all of the acreage of row crops was gone, except for areas planted to silage for the remaining dairies. According to the 1970 Conservation Needs Inventory, Lincoln County had 10,184 acres of cropland, 81,200 acres of pastureland, and 81,289 acres of woodland and Wilkes County had 32,358 acres of cropland, 35,184 acres of pastureland, and 219,907 acres of woodland. According to the 1992 Inventory of Agriculture, Lincoln County has only 2,410 acres of cropland and Wilkes County has only 13,720 acres.

In 1937, the State of Georgia passed legislation that established Soil Conservation Districts. The Broad River Soil Conservation District, the second district formed in the state, was established in November 1937. It included Wilkes County as one of its eight charter counties. The Lincoln County Soil Conservation District was established in September 1948. All districts in Georgia were changed to Soil and Water Conservation Districts in the 1980’s. Conservation District members and the farmers that they represent in the survey area have actively promoted land management practices that conserve topsoil, protect ground water, and thus provide optimum economic and environmental use of the land. The conservation practices used today in Lincoln and Wilkes Counties include conservation tillage, terraces, grassed

waterways, improved pastures, protected farm ponds, and livestock waste management systems.

In the 1960's and early 1970's, public concern about the productive capacity of American agriculture prompted a National inventory of important farmlands. The best land available for food, forage, and fiber crops in Lincoln and Wilkes Counties is identified under the heading "Prime Farmland."

Land use in Lincoln and Wilkes Counties has come full circle since the establishment of the original Wilkes County in 1777. Originally almost completely forest land, the counties have been used for tobacco and cotton production, then the production of other row crops, then pasture and dairy land, and then dominantly woodland production. Agriculture, however, remains an important part of the economy of the survey area.

Water Resources

The most abundant water supplies in Lincoln County are provided by the Savannah and Little Rivers, both of which form part of Clarks Hill Reservoir. Other major drainageways in the county are Fishing Creek, Lloyd Creek, Newford Creek, Pistol Creek, and Soap Creek.

The most abundant water supplies in Wilkes County are provided by the Broad and Little Rivers. Other major drainageways in the county are Anderson Mill Creek, Chickasaw Creek, Clark Creek, Dry Fork Creek, Fishing Creek, Kettle Creek, Long Creek, Pistol Creek, and Rocky Creek.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Washington, Georgia, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season. Data on thunderstorm days, relative humidity, percent sunshine, and winds are estimated from information recorded by the First Order Station, Athens, Georgia.

In winter, the average temperature is 43.1 degrees F and the average daily minimum temperature is 31.0 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -5 degrees. In summer, the average temperature is 77.0 degrees and the average daily maximum temperature is 88.5 degrees. The highest recorded temperature, which occurred on June 30, 1952, is 109 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total average annual precipitation is 48.75 inches. Of this, about 27.10 inches, or 56 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 5.24 inches on May 3, 1964. Thunderstorms occur on about 51 days each year, and most occur in July.

The average seasonal snowfall is 0.1 inch. The heaviest 1-day snowfall on record was 4.0 inches on January 19, 1992.

The average relative humidity in midafternoon is about 56 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 51 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 8.9 miles per hour, in February.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify the soils. After describing the soils and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. The data from these analyses and tests and from field-observed characteristics and soil properties are used to predict behavior of the soils under different uses. Interpretations are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil

scientists can predict with a relatively high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in accurately locating boundaries.

Survey Procedures

The general procedures followed in making this survey are described in the "National Soil Survey Handbook" of the Natural Resources Conservation Service and in the "Soil Survey Manual" *(7, 9)*.

Before fieldwork began, preliminary boundaries of slopes and landforms were plotted stereoscopically on aerial photographs taken in 1981 at a scale of 1:20,000. United States Geological Survey geologic and topographic maps at a scale of 1:24,000 were also used. Map units were then designed according to the pattern of soils interpreted from photographs, maps, and field observations.

Traverses were made by truck or four-wheeler or on foot. The soils were examined at intervals ranging from a few hundred feet to about $^{1}/_{4}$ mile, depending on the landscape and soil pattern. Observations of special features, such as landforms, vegetation, and evidence of flooding, were made continuously without regard to spacing. Soil boundaries were determined on the basis of soil examinations, observations, and photo interpretations. In many areas, such as those where very steep slopes intersect with flood plains, these boundaries are precise because of an abrupt change in the landform. The soils were examined with the aid of a bucket auger or a spade to a depth of about 3 to 5 feet. The typical pedons were observed in pits dug by hand.

After completion of the soil mapping on aerial photographs, map unit delineations were transferred by hand to orthophotographs at a scale of 1:12,000. Surface drainage and cultural features were transferred from 7.5-minute topographic maps of the United States Geological Survey.

General Soil Map Units

The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Toccoa-Cartecay-Shellbluff

Nearly level, very deep, well drained to somewhat poorly drained soils that have a loamy surface layer, subsoil, and underlying material; formed in recent alluvium; on flood plains

Setting

Location in the survey area: Along the Little River and its tributaries, Dry Fork and its tributaries, Fishing Creek, and Soap Creek
Landform: Flood plains
Slope range: 0 to 2 percent

Extent and Composition

Percent of the survey area: 4
Toccoa soils: 40 percent
Cartecay soils: 21 percent
Shellbluff soils: 17 percent
Minor soils: 22 percent

Soil Properties and Qualities

Toccoa
Landform: Flood plains
Depth class: Very deep
Drainage class: Well drained or moderately well drained
Slope range: Nearly level
Underlying material color: Reddish brown
Underlying material texture: Loamy
Depth to high water table: 2.5 to 5.0 feet
Parent material: Recent loamy alluvium

Cartecay
Landform: Flood plains
Depth class: Very deep
Drainage class: Somewhat poorly drained
Slope range: Nearly level
Underlying material color: Upper part—brown; lower part—gray with brown mottles
Underlying material texture: Loamy
Depth to high water table: 0.5 foot to 1.5 feet
Parent material: Recent loamy alluvium

Shellbluff
Landform: Flood plains
Depth class: Very deep
Drainage class: Well drained or moderately well drained
Slope range: Nearly level
Subsoil color: Brown
Subsoil texture: Loamy
Depth to high water table: 3.0 to 5.0 feet
Parent material: Recent silty alluvium

Minor Soils
- Chewacla soils, which are somewhat poorly drained and fine-loamy
- Fork soils, which are moderately well drained, have a loamy subsoil, and occur on low stream terraces
- Wehadkee soils, which are poorly drained and have a loamy subsoil
- Wickham soils, which are well drained, have a loamy subsoil, and occur on high stream terraces

Use and Management

Major uses: Woodland, pasture, hayland, and wildlife habitat
Management concerns:
- Wetness and the hazard of flooding are the main limitations affecting urban and recreational uses.

2. Cecil-Pacolet-Madison

Gently sloping to moderately steep, very deep, well drained soils that have a loamy surface layer and a clayey subsoil; formed in material weathered from fine grained felsic and micaceous igneous and metamorphic bedrock; on uplands

Setting

Location in the survey area: Western, central, and northern parts
Landform: Hills
Landform position: Broad to narrow, gently sloping or sloping summits and shoulders and narrow, strongly sloping or moderately steep backslopes
Slope range: 2 to 25 percent

Extent and Composition

Percent of the survey area: 36
Cecil soils: 36 percent
Pacolet soils: 24 percent
Madison soils: 5 percent
Minor soils: 35 percent

Soil Properties and Qualities

Cecil
Landform: Hills
Landform position: Broad to narrow summits and shoulders
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping or sloping
Subsoil color: Red
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Felsic igneous and high-grade metamorphic bedrock

Pacolet
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping to moderately steep
Subsoil color: Red
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Felsic crystalline bedrock

Madison
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping to moderately steep
Subsoil color: Red
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Felsic and intermediate, micaceous high-grade metamorphic bedrock

Minor Soils
- Appling and Wedowee soils, which have a yellow or brown subsoil
- Georgeville soils, which have a higher content of silt than the major soils
- Helena soils, which are moderately well drained
- Lloyd soils, which have a dark red subsoil
- Mecklenburg soils, which have a sticky and plastic subsoil and have base saturation greater than 35 percent
- Wilkes soils, which have weathered bedrock within a depth of 20 inches and are stony
- Cartecay and Toccoa soils, which are on flood plains

Use and Management

Major uses: Woodland, pasture, and hayland
Management concerns:
- The slope is the main limitation affecting cropland and urban and recreational uses.

3. Wedowee-Appling-Helena

Gently sloping to moderately steep, very deep, well drained and moderately well drained soils that have a loamy surface layer and a clayey subsoil; formed in material

weathered from metadacite and other felsic igneous and metamorphic bedrock; on uplands

Setting

Location in the survey area: Primarily around the towns of Lincolnton, Rayle, and Celeste
Landform: Hills
Landform position: Broad to narrow, gently sloping or sloping summits and shoulders and narrow, strongly sloping or moderately steep backslopes
Slope range: 2 to 25 percent

Extent and Composition

Percent of the survey area: 9
Wedowee soils: 32 percent
Appling soils: 30 percent
Helena soils: 18 percent
Minor soils: 20 percent

Soil Properties and Qualities

Wedowee
Landform: Hills
Landform position: Broad to narrow shoulders and narrow backslopes
Depth class: Very deep
Drainage class: Well drained
Slope range: Sloping to moderately steep
Subsoil color: Strong brown
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Felsic crystalline bedrock

Appling
Landform: Hills
Landform position: Broad to narrow summits and shoulders
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping or sloping
Subsoil color: Strong brown
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Felsic igneous and high-grade metamorphic bedrock

Helena
Landform: Hills
Landform position: Broad to narrow summits and shoulders, narrow backslopes, and areas around the head of drainageways
Depth class: Very deep
Drainage class: Moderately well drained
Slope range: Gently sloping to strongly sloping
Subsoil color: Yellowish brown
Subsoil texture: Clayey
Depth to high water table: 1.5 to 2.5 feet
Parent material: Mixture of felsic and high-grade metamorphic bedrock that is cut by dikes of diorite and gabbro

Minor Soils
- Ashlar soils, which have a loamy subsoil and are moderately deep to hard bedrock
- Cartecay and Toccoa soils, which are on flood plains
- Cecil and Pacolet soils, which have a red subsoil
- Rion soils, which have a loamy subsoil
- Wake soils, which are shallow to bedrock
- Wateree soils, which have a loamy subsoil and are moderately deep to soft bedrock

Use and Management

Major uses: Woodland, pasture, and hayland
Management concerns:
- The slope is the main limitation affecting cropland and recreational uses.
- The high water table and the slope limit residential uses.

4. Pacolet-Rion-Ashlar

Gently sloping to moderately steep, very deep to moderately deep, well drained to excessively drained soils that have a fine gravelly loamy surface layer and a clayey or loamy subsoil; formed in material weathered from porphorytic granite and other coarse grained felsic crystalline bedrock; on uplands

Setting

Location in the survey area: North-central part
Landform: Hills
Landform position: Broad to narrow, gently sloping or sloping summits and shoulders and narrow, strongly sloping or moderately steep backslopes
Slope range: 2 to 25 percent

Extent and Composition

Percent of the survey area: 6
Pacolet soils: 68 percent
Rion soils: 9 percent
Ashlar soils: 6 percent
Minor soils: 17 percent

Soil Properties and Qualities

Pacolet
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping to moderately steep
Subsoil color: Red
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Porphorytic granite and other coarse grained crystalline bedrock

Rion
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping to moderately steep

Subsoil color: Red
Subsoil texture: Loamy
Depth to high water table: More than 6.0 feet
Parent material: Acid crystalline bedrock

Ashlar
Landform: Hills
Landform position: Narrow backslopes
Depth class: Moderately deep
Drainage class: Excessively drained
Slope range: Strongly sloping or moderately steep
Subsoil color: Brownish yellow
Subsoil texture: Loamy
Depth to high water table: More than 6.0 feet
Parent material: Coarse grained granite and gneiss

Minor Soils
- Appling and Wedowee soils, which have a yellow or brown subsoil
- Cartecay and Toccoa soils, which are on flood plains
- Cecil soils, which have a solum that is 40 to 60 inches or more thick
- Wake soils, which are shallow to bedrock
- Wateree soils, which are moderately deep to soft bedrock

Use and Management

Major uses: Woodland, pasture, and hayland
Management concerns:
- The slope and the depth to bedrock are the main limitations affecting cropland and recreational and urban uses.

5. Mecklenburg-Zion-Enon

Gently sloping to moderately steep, very deep to moderately deep, well drained soils that have a loamy surface layer and a clayey subsoil that is sticky and plastic; formed in material weathered from mafic crystalline bedrock; on uplands

Setting

Location in the survey area: Throughout the survey area
Landform: Hills
Landform position: Broad to narrow, gently sloping or sloping summits and shoulders and narrow, strongly sloping or moderately steep backslopes
Slope range: 2 to 25 percent

Extent and Composition

Percent of the survey area: 10
Mecklenburg soils: 44 percent
Zion soils: 24 percent
Enon soils: 13 percent
Minor soils: 19 percent

Soil Properties and Qualities

Mecklenburg
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Very deep
Drainage class: Well drained

Slope range: Gently sloping to moderately steep
Subsoil color: Red
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Mafic crystalline bedrock

Zion
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Moderately deep
Drainage class: Well drained
Slope range: Gently sloping to moderately steep
Subsoil color: Yellowish red
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Dark mafic bedrock

Enon
Landform: Hills
Landform position: Broad to narrow summits and shoulders
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping or sloping
Subsoil color: Brownish yellow
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Mafic or intermediate igneous and high-grade metamorphic bedrock

Minor Soils
- Chewacla and Shellbluff soils, which are on flood plains
- Helena soils, which are moderately well drained
- Lloyd soils, which have a dark red subsoil
- Wilkes soils, which are shallow to weathered bedrock and are stony

Use and Management

Major uses: Woodland, pasture, and hayland
Management concerns:
- The slope is the main limitation affecting cropland.
- The main limitations affecting urban and residential uses are the depth to bedrock, a high shrink-swell potential, and the slope.

6. Georgeville-Herndon-Badin

Gently sloping to moderately steep, very deep to moderately deep, well drained soils that have a loamy surface layer and a clayey or loamy subsoil; formed in material weathered from Carolina Slates or other fine grained metavolcanic bedrock; on uplands

Setting

Location in the survey area: Southern, southeastern, and northwestern parts
Landform: Hills
Landform position: Broad to narrow, gently sloping or sloping summits and shoulders and narrow, strongly sloping or moderately steep backslopes
Slope range: 2 to 25 percent

Extent and Composition

Percent of the survey area: 35
Georgeville soils: 70 percent
Herndon soils: 7 percent
Badin soils: 5 percent
Minor soils: 18 percent

Soil Properties and Qualities

Georgeville
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping to moderately steep
Subsoil color: Red
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Carolina Slates or other fine grained metavolcanic bedrock

Herndon
Landform: Hills
Landform position: Broad to narrow summits and shoulders
Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping or sloping
Subsoil color: Brownish yellow
Subsoil texture: Clayey
Depth to high water table: More than 6.0 feet
Parent material: Carolina Slates or other fine grained metavolcanic bedrock

Badin
Landform: Hills
Landform position: Broad to narrow summits and shoulders and narrow backslopes
Depth class: Moderately deep
Drainage class: Well drained
Slope range: Gently sloping to moderately steep
Subsoil color: Reddish yellow
Subsoil texture: Loamy
Depth to high water table: More than 6.0 feet
Parent material: Carolina Slates or other fine grained metavolcanic bedrock

Minor Soils
- Chewacla and Shellbluff soils, which are on flood plains
- Enon, Mecklenburg, and Zion soils, which have a sticky and plastic subsoil and formed in mafic bedrock
- Pageland soils, which are moderately well drained and occur around the head of drainageways

Use and Management

Major uses: Woodland, pasture, and hayland
Management concerns:
- The slope is the main limitation affecting cropland.
- The slope and the depth to bedrock are the main limitations affecting urban and recreational uses.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown

on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Cecil sandy loam, 6 to 10 percent slopes, is a phase of the Cecil series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Rion-Wateree-Wake complex, 2 to 10 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarry, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

AkA—Altavista sandy loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape: Piedmont
Landform: Low stream terraces
Slope: Nearly level
Slope topography: Smooth and slightly concave
Size of areas: 5 to 40 acres

Typical Profile

Surface layer:
0 to 5 inches—brown sandy loam

Subsurface layer:
5 to 10 inches—yellowish brown sandy loam

Subsoil:
10 to 14 inches—light yellowish brown clay loam
14 to 19 inches—yellowish brown clay loam that has common very pale brown mottles
19 to 30 inches—yellowish brown clay loam that has common light brownish gray and common pale brown mottles
30 to 39 inches—yellowish brown clay loam that has many light brownish gray mottles

Substratum:
39 to 55 inches—brownish yellow sandy loam that has many light gray mottles
55 to 60 inches—light gray loamy sand that has many brownish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Moderate
Depth to high water table: 1.5 to 2.5 feet
Frequency of flooding: Rare
Surface runoff: Slow
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Low to moderate

Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Loamy fluvial sediments

Minor Components

- Areas of Cartecay, Chewacla, Fork, Roanoke, Shellbluff, Toccoa, and Wickham soils
- Soils that have slopes greater than 2 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Delayed planting may be needed due to the flooding hazard in early spring.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Hay bales should be moved to areas outside the flood zone.
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: High for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness

Local roads and streets
Suitability: Poorly suited
Management concerns: Flooding, wetness, and low strength

Management measures and considerations:
- Compacted fill material can be used as road base to raise roads above the level of flooding and reduce the wetness limitation.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

AmB—Appling sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 9 inches—brown sandy loam

Subsoil:
9 to 15 inches—brownish yellow sandy clay loam
15 to 26 inches—brownish yellow sandy clay that has common yellowish red mottles
26 to 33 inches—brownish yellow sandy clay that has many yellowish red mottles
33 to 41 inches—brownish yellow sandy clay loam that has common yellowish red and common very pale brown mottles

Substratum:
41 to 60 inches—brownish yellow saprolite that crushes to sandy clay loam and has many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic igneous and high-grade metamorphic rocks

Minor Components

- Areas of Cecil, Helena, Madison, Pacolet, Rion, and Wedowee soils
- Soils that have more than 15 percent quartz pebbles in the surface layer
- Soils that have bedrock within a depth of 60 inches

- Soils that have iron depletions and have a high water table at a depth of 30 to 60 inches
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

AmC—Appling sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 9 inches—brown sandy loam

Subsoil:
9 to 15 inches—brownish yellow sandy clay loam
15 to 26 inches—brownish yellow sandy clay that has common yellowish red mottles
26 to 33 inches—brownish yellow sandy clay that has many yellowish red mottles
33 to 41 inches—brownish yellow sandy clay loam that has common yellowish red and common very pale brown mottles

Substratum:
41 to 60 inches—brownish yellow saprolite that crushes to sandy clay loam and has many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic igneous and high-grade metamorphic rocks

Minor Components

- Areas of Cecil, Helena, Madison, Pacolet, Rion, and Wedowee soils
- Soils that have bedrock within a depth of 60 inches
- Soils that have iron depletions and have a high water table at a depth of 30 to 60 inches
- Soils that have more than 15 percent quartz pebbles in the surface layer
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

BaC—Badin silt loam, 2 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits and shoulders
Slope: Gently sloping or sloping
Slope topography: Smooth and convex
Size of areas: 5 to 135 acres

Typical Profile

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 14 inches—reddish yellow channery clay loam
14 to 23 inches—reddish yellow channery silty clay loam that has few yellowish red and few brownish yellow mottles

Substratum:
23 to 45 inches—multicolored yellowish red, reddish yellow, and brownish yellow highly fractured slate
45 inches—fractured slate bedrock

Soil Properties and Qualities

Depth class: Moderately deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium or rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Moderately low or moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Depth to bedrock: 20 to 40 inches to soft bedrock; 40 inches or more to hard bedrock
Parent material: Residuum weathered from slates and other fine grained metamorphic rocks

Minor Components

- Areas of Georgeville, Herndon, Pageland, Wilkes, and Zion soils
- Soils that are fine-silty in the control section
- Soils that have an eroded surface layer
- Soils that have stones or boulders on the surface
- Soils that have bedrock at a depth of less than 20 inches

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Depth to bedrock and erodibility
Management measures and considerations:
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and growing shallow-rooted crops helps to overcome the rooting depth limitation.
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Depth to bedrock and erodibility
Management measures and considerations:
- Shallow-rooted grasses and legumes that are adapted to droughty conditions resulting from the depth to bedrock should be selected for planting.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants and windthrow hazard
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Depth to bedrock
Management measures and considerations:
- Excavation and removal of hard bedrock or the use of special earthmoving equipment is needed for foundation construction.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and depth to bedrock
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.

- Blasting or using special grading equipment to remove hard bedrock may be necessary for road construction.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 8D, based on loblolly pine as the indicator species

BaE—Badin silt loam, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 150 acres

Typical Profile

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 14 inches—reddish yellow channery clay loam
14 to 23 inches—reddish yellow channery silty clay loam that has few yellowish red and few brownish yellow mottles

Substratum:
23 to 45 inches—multicolored yellowish red, reddish yellow, and brownish yellow highly fractured slate
45 inches—fractured slate bedrock

Soil Properties and Qualities

Depth class: Moderately deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Moderately low or moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Depth to bedrock: 20 to 40 inches to soft bedrock; more than 40 inches to hard bedrock
Parent material: Residuum weathered from slates and other fine grained metamorphic rocks

Minor Components

- Areas of Georgeville, Herndon, Pageland, Wilkes, and Zion soils
- Soils that are fine-silty in the control section
- Soils that have an eroded surface layer
- Soils that have bedrock at a depth of less than 20 inches
- Soils that have stones or boulders on the surface

- Areas of rock outcrops
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility, equipment use, and depth to bedrock
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- The use of equipment should be restricted to the less sloping areas.
- Shallow-rooted grasses and legumes that are adapted to droughty conditions resulting from the depth to bedrock should be selected for planting.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, windthrow hazard, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slope and depth to bedrock
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope and depth to bedrock
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

• Excavation and removal of hard bedrock or the use of special earthmoving equipment is needed for foundation construction.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope and low strength
Management measures and considerations:
• Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
• Providing sand and gravel and compacting roadbeds improve soil strength.
• Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

Ca—Cartecay loam, frequently flooded

Setting

Landscape: Piedmont
Landform: Flood plains
Slope: Nearly level
Slope topography: Smooth and slightly concave
Size of areas: 5 to 105 acres

Typical Profile

Surface layer:
0 to 9 inches—brown loam

Underlying material:
9 to 15 inches—brown loam that has many very pale brown mottles and thin strata of fine sandy loam
15 to 25 inches—brown loam that has many very pale brown and many light brownish gray mottles and thin strata of coarse sandy loam and sandy loam
25 to 40 inches—gray sandy loam that has common strong brown mottles and thin strata of loamy sand
40 to 60 inches—gray sandy loam and thin strata of loamy coarse sand, loamy sand, and loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid
Depth to high water table: 0.5 foot to 1.5 feet
Frequency of flooding: Frequent
Surface runoff: Slow
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Moderate
Available water capacity: Low or moderate
Shrink-swell potential: Low
Parent material: Loamy alluvial sediments

Minor Components

- Areas of Altavista, Chewacla, Fork, Helena, Roanoke, Shellbluff, Toccoa, and Wehadkee soils

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Flooding and wetness

Pasture and hayland
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Hay bales should be moved to areas outside the flood zone.
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: High for loblolly pine
Management concerns: Equipment use and competition from undesirable plants
Management measures and considerations:
- Restricting the use of wheeled or tracked equipment to periods when the soil is not wet or flooded helps to prevent rutting, erosion, and sedimentation.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness

Local roads and streets
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Compacted fill material can be used as road base to raise roads above the level of flooding and reduce the wetness limitation.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: Vw
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

CeB—Cecil sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 160 acres

Typical Profile

Surface layer:
0 to 8 inches—strong brown sandy loam

Subsoil:
8 to 16 inches—yellowish red sandy clay loam
16 to 42 inches—red sandy clay
42 to 55 inches—red sandy clay loam

Substratum:
55 to 60 inches—red saprolite that crushes to sandy clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic, igneous, and high-grade metamorphic rocks

Minor Components

- Areas of Appling, Helena, Lloyd, Madison, Mecklenburg, Pacolet, Rion, and Wedowee soils
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture, hayland, and cropland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility

Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

CeC—Cecil sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders

Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 75 acres

Typical Profile

Surface layer:
0 to 8 inches—strong brown sandy loam

Subsoil:
8 to 16 inches—yellowish red sandy clay loam
16 to 42 inches—red sandy clay
42 to 55 inches—red sandy clay loam

Substratum:
55 to 60 inches—red saprolite that crushes to sandy clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic, igneous, and high-grade metamorphic rocks

Minor Components

- Areas of Appling, Helena, Lloyd, Madison, Mecklenburg, Pacolet, Rion, and Wedowee soils
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland

Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields

Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings

Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets

Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

CfC2—Cecil sandy clay loam, 6 to 10 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern

Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 120 acres

Typical Profile

Surface layer:
0 to 3 inches—yellowish red sandy clay loam

Subsoil:
3 to 7 inches—red sandy clay loam
7 to 40 inches—red sandy clay
40 to 55 inches—red sandy clay loam

Substratum:
55 to 60 inches—red saprolite that crushes to sandy clay loam and has common reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Moderate
Hazard of water erosion: High
Organic matter content: Low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic, igneous, and high-grade metamorphic rocks

Minor Components

- Areas of Appling, Helena, Lloyd, Madison, Mecklenburg, Pacolet, Rion, and Wedowee soils
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: High content of clay and erodibility
Management measures and considerations:
- Incorporating crop residue into the soil or leaving residue on the soil surface and restricting tillage to periods when the soil is not wet help to minimize clodding and crusting and maximize rainfall infiltration.
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility

Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use, seedling mortality, and competition from undesirable plants
Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

CgC—Cecil-Urban land complex, 2 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits and shoulders
Slope: Gently sloping or sloping
Slope topography: Smooth and convex
Size of areas: 5 to 235 acres

Composition

Pattern of occurrence: Cecil soil and Urban land occur as areas too intermingled to be mapped separately at the selected scale
Cecil soil and similar soils—45 percent
Urban land—35 percent
Minor soils—20 percent

Typical Profile

Cecil
Surface layer:
0 to 8 inches—strong brown sandy loam

Subsoil:
8 to 16 inches—yellowish red sandy clay loam
16 to 42 inches—red sandy clay
42 to 55 inches—red sandy clay loam

Substratum:
55 to 60 inches—red saprolite that crushes to sandy clay loam

Urban land
Urban land consists of areas that are covered with roads, parking lots, closely spaced houses, buildings, or other structures. Identification of the soils in these areas is not feasible because they are covered or altered.

Properties and Qualities of the Cecil Soil

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium or rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic, igneous, and high-grade metamorphic rocks

Minor Components

- Areas of Appling, Helena, Lloyd, Madison, Mecklenburg, Pacolet, Rion, and Wedowee soils
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer
- Soils that have slopes greater than 10 percent

Land Use and Management

Dominant Uses: Urban land
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for crop production because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.

Pasture and hayland
Suitability: Poorly suited
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for the production of pasture and hay because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for timber production because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.

- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: Cecil—IIIe; Urban land—none assigned
Woodland ordination symbol: Cecil—8A, based on loblolly pine as the indicator species; Urban land—none assigned

Ch—Chewacla loam, frequently flooded

Setting

Landscape: Piedmont
Landform: Flood plains
Slope: Nearly level
Slope topography: Smooth and slightly concave
Size of areas: 5 to 60 acres

Typical Profile

Surface layer:
0 to 6 inches—yellowish brown loam

Subsoil:
6 to 21 inches—brown clay loam that has common very dark grayish brown and few light grayish brown mottles
21 to 36 inches—brown clay loam that has many dark brown and many light brownish gray mottles
36 to 45 inches—light brownish gray sandy clay loam that has common pale brown mottles

Substratum:
45 to 60 inches—light gray sandy clay loam that has common pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Somewhat poorly drained
Permeability: Moderate
Depth to high water table: 0.5 foot to 2.0 feet
Frequency of flooding: Frequent
Surface runoff: Slow
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Moderately low or moderate
Available water capacity: Moderate to very high
Shrink-swell potential: Low
Parent material: Loamy alluvial sediments

Minor Components

- Areas of Altavista, Chewacla, Fork, Helena, Roanoke, Shellbluff, Toccoa, and Wehadkee soils

Land Use and Management

Dominant Uses: Woodland (fig. 2)
Other Uses: Pasture and hayland

Figure 2.—Woodland in an area of Chewacla loam, frequently flooded.

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Delayed planting may be needed due to the flooding hazard in early spring and the high water table.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Hay bales should be moved to areas outside the flood zone.
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use, windthrow hazard, and competition from undesirable plants

Management measures and considerations:
- Restricting the use of wheeled or tracked equipment to periods when the soil is not wet or flooded helps to prevent rutting, erosion, and sedimentation.
- Periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength, flooding, and wetness
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Compacted fill material can be used as road base to raise roads above the level of flooding and reduce the wetness limitation.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 7W, based on sweetgum as the indicator species

Dp—Dumps-Pits complex

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits, shoulders, and backslopes
Landform features: Areas where the natural soil and geologic material have been excavated during mining operations, including pits that are 25 to 200 feet deep and adjacent dump areas where waste rock, soil overburden, and tailings have been stockpiled
Slope: 0 to 35 percent
Slope topography: Irregular
Size of areas: 5 to 235 acres

Typical Profile

This map unit consists of areas that include stockpiles of metamorphic rock, in varying sizes and shapes; silty and clayey overburden materials; and tailing pond sediments. The soils in these areas are highly variable, and a typical profile is not given.

Land Use and Management

Most areas of this map unit have been abandoned and are sparsely covered with woody shrubs and grasses. Onsite investigation is required to determine the suitability or potential of the unit for any use and the degree of reclamation needed.

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns:
- This map unit is difficult to manage for crop production because of the highly variable soil properties and the small size of its areas.

Pasture and hayland
Suitability: Unsuited
Management concerns:
- This map unit is difficult to manage for the production of pasture and hayland because of the highly variable soil properties and the small size of its areas.

Woodland
Suitability: Unsuited
Management concerns:
- This map unit is difficult to manage for timber production because of the highly variable soil properties and the small size of its areas.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns:
- The highly variable soil properties and uneven settling are severe limitations affecting septic tank absorption fields.

Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns:
- The highly variable soil properties and uneven settling are severe limitations affecting dwellings. A site should be selected on better suited soils.

Local roads and streets
Suitability: Unsuited
Management concerns:
- The highly variable soil properties and uneven settling are severe limitations affecting roads and streets. A site should be selected on better suited soils.

Interpretive Groups

Land capability classification: None assigned
Woodland ordination symbol: None assigned

EnB—Enon fine sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 55 acres

Typical Profile

Surface layer:
0 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 21 inches—brownish yellow clay
21 to 30 inches—olive yellow clay
30 to 34 inches—light olive brown clay
34 to 38 inches—olive clay loam that has common light olive brown mottles

Substratum:
38 to 60 inches—olive saprolite that crushes to clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: High
Parent material: Residuum weathered from mafic or intermediate igneous and high-grade metamorphic rocks, such as diorite, gabbro, diabase, and hornblende schist

Minor Components

- Areas of Helena, Lloyd, Mecklenburg, Wilkes, and Zion soils
- Soils that are moderately well drained
- Soils that have a solum that is thinner than that of the Enon soil
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.

- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use
Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slow permeability
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Removing as much of the clay as possible and increasing the thickness of the base aggregate help to improve soil performance.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

EnC—Enon fine sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills

Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 30 acres

Typical Profile

Surface layer:
0 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 21 inches—brownish yellow clay
21 to 30 inches—olive yellow clay
30 to 34 inches—light olive brown clay
34 to 38 inches—olive clay loam that has common light olive brown mottles

Substratum:
38 to 60 inches—olive saprolite that crushes to clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: High
Parent material: Residuum weathered from mafic or intermediate igneous and high-grade metamorphic rocks, such as diorite, gabbro, diabase, and hornblende schist

Minor Components

- Areas of Helena, Lloyd, Mecklenburg, Wilkes, and Zion soils
- Soils that are moderately well drained
- Soils that have a solum that is thinner than that of the Enon soil
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility

Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use
Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slow permeability
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Removing as much of the clay as possible and increasing the thickness of the base aggregate help to improve soil performance.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

FrA—Fork silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landscape: Piedmont
Landform: Low stream terraces
Slope: Nearly level

Slope topography: Smooth and slightly concave
Size of areas: 5 to 15 acres

Typical Profile

Surface layer:
0 to 3 inches—brown silt loam

Subsoil:
3 to 9 inches—brown silt loam
9 to 13 inches—yellowish brown clay loam that has few strong brown and many brown mottles
13 to 19 inches—brown sandy clay loam that has common grayish brown mottles
19 to 28 inches—gray sandy clay loam that has few brown and common yellowish brown mottles
28 to 46 inches—gray clay loam that has common strong brown mottles

Substratum:
46 to 60 inches—light brownish gray sandy loam that has many yellowish brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Somewhat poorly drained
Permeability: Moderate
Depth to high water table: 1.0 to 2.0 feet
Frequency of flooding: Occasional
Surface runoff: Slow
Extent of erosion: Slight
Hazard of water erosion: Low
Organic matter content: Moderately low or moderate
Available water capacity: Moderate to very high
Shrink-swell potential: Low
Parent material: Loamy alluvial sediments

Minor Components

- Areas of Altavista, Cartecay, Chewacla, Roanoke, Shellbluff, Toccoa, and Wehadkee soils

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Flooding, wetness, and equipment use
Management measures and considerations:
- Delayed planting may be needed due to the flooding hazard in early spring and the high water table.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.

Pasture and hayland
Suitability: Well suited
Management concerns: Flooding and wetness

Management measures and considerations:
- Hay bales should be moved to areas outside the flood zone.
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and competition from undesirable plants
Management measures and considerations:
- Restricting the use of wheeled or tracked equipment to periods when the soil is not wet helps to prevent rutting, erosion, and sedimentation.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness

Local roads and streets
Suitability: Poorly suited
Management concerns: Flooding, wetness, and low strength
Management measures and considerations:
- Compacted fill material can be used as road base to raise roads above the level of flooding and reduce the wetness limitation.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIw
Woodland ordination symbol: 9W, based on loblolly pine as the indicator species

GeB—Georgeville silt loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 200 acres

Typical Profile

Surface layer:
0 to 6 inches—strong brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 24 inches—red clay that has few yellowish red mottles
24 to 45 inches—red clay that has common strong brown mottles
45 to 50 inches—red silty clay loam that has common strong brown mottles

Substratum:
50 to 60 inches—red saprolite that crushes to silty clay loam and has many strong brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks

Minor Components

- Areas of Badin, Herndon, Lloyd, Mecklenburg, Pageland, and Zion soils
- Soils that have a solum that is thinner than that of the Georgeville soil
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

GeC—Georgeville silt loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 130 acres

Typical Profile

Surface layer:
0 to 6 inches—strong brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 24 inches—red clay that has few yellowish red mottles
24 to 45 inches—red clay that has common strong brown mottles
45 to 50 inches—red silty clay loam that has common strong brown mottles

Substratum:
50 to 60 inches—red saprolite that crushes to silty clay loam and has many strong brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks

Minor Components

- Areas of Badin, Herndon, Lloyd, Mecklenburg, Pageland, and Zion soils
- Soils that have a solum that is thinner than that of the Georgeville soil
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

GeE—Georgeville silt loam, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 70 acres

Typical Profile

Surface layer:
0 to 6 inches—strong brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 24 inches—red clay that has few yellowish red mottles
24 to 45 inches—red clay that has common strong brown mottles
45 to 50 inches—red silty clay loam that has common strong brown mottles

Substratum:
50 to 60 inches—red saprolite that crushes to silty clay loam and has many strong brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks

Minor Components

- Areas of Badin, Herndon, Lloyd, Mecklenburg, Pageland, Wilkes, and Zion soils
- Soils that have a solum that is thinner than that of the Georgeville soil
- Soils that have an eroded surface layer
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility and equipment use
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope and low strength
Management measures and considerations:
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

GoC2—Georgeville clay loam, 6 to 10 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 65 acres

Typical Profile

Surface layer:
0 to 3 inches—reddish brown clay loam

Subsoil:
3 to 7 inches—red clay loam
7 to 26 inches—red clay

26 to 40 inches—red clay that has few reddish yellow mottles
40 to 47 inches—red clay loam that has common reddish yellow mottles

Substratum:
47 to 60 inches—red saprolite that crushes to silty clay loam and has many reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Moderate
Hazard of water erosion: Very high
Organic matter content: Very low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks

Minor Components

- Areas of Badin, Herndon, Lloyd, Mecklenburg, Pageland, and Zion soils
- Soils that have a solum that is thinner than that of the Georgeville soil
- Soils that have an uneroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: High content of clay and erodibility
Management measures and considerations:
- Incorporating crop residue into the soil or leaving residue on the soil surface and restricting tillage to periods when the soil is not wet help to minimize clodding and crusting and maximize rainfall infiltration.
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling mortality

Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

GoE2—Georgeville clay loam, 10 to 25 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes

Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 100 acres

Typical Profile

Surface layer:
0 to 3 inches—reddish brown clay loam

Subsoil:
3 to 7 inches—red clay loam
7 to 26 inches—red clay
26 to 40 inches—red clay that has few reddish yellow mottles
40 to 47 inches—red clay loam that has common reddish yellow mottles

Substratum:
47 to 60 inches—red saprolite that crushes to silty clay loam and has many reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Moderate
Hazard of water erosion: Very high
Organic matter content: Very low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks

Minor Components

- Areas of Badin, Herndon, Lloyd, Mecklenburg, Pageland, Wilkes, and Zion soils
- Soils that have a solum that is thinner than that of the Georgeville soil
- Soils that have an uneroded surface layer
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Poorly suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.

- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and seedling mortality
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Slope and low strength
Management measures and considerations:
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

GuC—Georgeville-Urban land complex, 2 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits and shoulders
Slope: Gently sloping or sloping
Slope topography: Smooth and convex
Size of areas: 5 to 100 acres

Composition

Pattern of occurrence: Georgeville soil and Urban land occur as areas too intermingled to be mapped separately at the selected scale
Georgeville soil and similar soils—45 percent
Urban land—35 percent
Minor soils—20 percent

Typical Profile

Georgeville
Surface layer:
0 to 6 inches—strong brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 24 inches—red clay that has few yellowish red mottles
24 to 45 inches—red clay that has common strong brown mottles
45 to 50 inches—red silty clay loam that has common strong brown mottles

Substratum:
50 to 60 inches—red saprolite that crushes to silty clay loam and has many strong brown mottles

Urban land
Urban land occurs as areas that are covered with roads, parking lots, closely spaced houses, buildings, or other structures. Identification of the soils in these areas is not feasible because they are covered or altered.

Properties and Qualities of the Georgeville Soil

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium or rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks

Minor Components

- Areas of Badin, Herndon, Lloyd, and Mecklenburg soils
- Soils that have an eroded surface layer

• Soils that have slopes greater than 10 percent

Land Use and Management

Dominant Uses: Urban land
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Limited size of areas
Management measures and considerations:
• This map unit is difficult to manage for crop production because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.

Pasture and hayland
Suitability: Poorly suited
Management concerns: Limited size of areas
Management measures and considerations:
• This map unit is difficult to manage for the production of pasture and hay crops because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Limited size of areas
Management measures and considerations:
• This map unit is difficult to manage for timber production because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.
• The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
• Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
• Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
• The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
• Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
• Providing sand and gravel and compacting roadbeds improve soil strength.

- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: Georgeville—IIIe; Urban land—none assigned
Woodland ordination symbol: Georgeville—8A, based on loblolly pine as the indicator species; Urban land—none assigned

HeB—Helena sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits and areas around the head of drainageways
Slope: Gently sloping
Slope topography: Summits are smooth and convex; areas around the head of drainageways are smooth and slightly concave
Size of areas: 5 to 60 acres

Typical Profile

Surface layer:
0 to 4 inches—dark gray sandy loam

Subsurface layer:
4 to 11 inches—pale yellow sandy loam

Subsoil:
11 to 18 inches—brownish yellow sandy clay loam
18 to 27 inches—brownish yellow sandy clay that has common red mottles
27 to 37 inches—brownish yellow clay that has many red and common light brownish gray mottles
37 to 45 inches—yellowish brown sandy clay loam that has many light brownish gray mottles

Substratum:
45 to 60 inches—olive saprolite that crushes to loam and has many yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Slow
Depth to high water table: 1.5 to 2.5 feet
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: High
Parent material: Residuum weathered from a mixture of felsic and intermediate igneous or high-grade metamorphic rocks, such as aplitic granite, granite gneiss, or metadacite that is cut with dikes of gabbro and diorite

Minor Components

- Areas of Appling, Cecil, Enon, Madison, Mecklenburg, Pacolet, Wedowee, and Zion soils
- Soils that have a surface layer of loamy coarse sand
- Soils that are moderately acid to neutral in the subsoil and have base saturation greater than 35 percent
- Soils that have a solum that is less than 40 inches thick
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility and wetness
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Wetness
Management measures and considerations:
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Slow permeability in the subsoil and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Wetness and shrink-swell potential

Management measures and considerations:
- Installing a drainage system for the foundation and slab and landscaping so that surface runoff is diverted can reduce the risk of damage from wetness.
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength, shrink-swell potential, and wetness
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Removing as much of the clay as possible and increasing the thickness of the base aggregate help to improve soil performance.
- Constructing roads on raised and compacted fill material helps to overcome the wetness limitation.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

HeC—Helena sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders, toeslopes, and areas around the head of drainageways
Slope: Sloping
Slope topography: Shoulders and toe slopes are smooth and convex; areas around the head of drainageways are smooth and slightly concave
Size of areas: 5 to 120 acres

Typical Profile

Surface layer:
0 to 4 inches—dark gray sandy loam

Subsurface layer:
4 to 11 inches—pale yellow sandy loam

Subsoil:
11 to 18 inches—brownish yellow sandy clay loam
18 to 27 inches—brownish yellow sandy clay that has common red mottles
27 to 37 inches—brownish yellow clay that has many red and common light brownish gray mottles
37 to 45 inches—yellowish brown sandy clay loam that has many light brownish gray mottles

Substratum:
45 to 60 inches—olive saprolite that crushes to loam and has many yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Moderately well drained

Permeability: Slow
Depth to high water table: 1.5 to 2.5 feet
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: High
Parent material: Residuum weathered from a mixture of felsic and intermediate igneous or high-grade metamorphic rocks, such as aplitic granite, granite gneiss, or metadacite that is cut with dikes of gabbro and diorite

Minor Components

- Areas of Appling, Cecil, Enon, Madison, Mecklenburg, Pacolet, Wedowee, and Zion soils
- Soils that have a surface layer of loamy coarse sand
- Soils that are moderately acid to neutral in the subsoil and have base saturation greater than 35 percent
- Soils that have a solum that is less than 40 inches thick
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Wetness and erodibility
Management measures and considerations:
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility and wetness
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.

- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Slow permeability in the subsoil and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential and wetness
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.
- Installing a drainage system for the foundation and slab and landscaping so that surface runoff is diverted can reduce the risk of damage from wetness.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential, low strength, and wetness
Management measures and considerations:
- Removing as much of the clay as possible and increasing the thickness of the base aggregate help to improve soil performance.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Constructing roads on raised and compacted fill material helps to overcome the wetness limitation.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

HeD—Helena sandy loam, 10 to 15 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, toeslopes, and areas around the head of drainageways
Slope: Strongly sloping
Slope topography: Smooth and convex on back slopes and toe slopes; smooth and concave on foot slopes; smooth and slightly concave in areas around the head of drainageways
Size of areas: 5 to 160 acres

Typical Profile

Surface layer:
0 to 4 inches—dark gray sandy loam

Subsurface layer:
4 to 11 inches—pale yellow sandy loam

Subsoil:
11 to 18 inches—brownish yellow sandy clay loam
18 to 27 inches—brownish yellow sandy clay that has common red mottles
27 to 37 inches—brownish yellow clay that has many red and common light brownish gray mottles
37 to 45 inches—yellowish brown sandy clay loam that has many light brownish gray mottles

Substratum:
45 to 60 inches—olive saprolite that crushes to loam and has many yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Slow
Depth to high water table: 1.5 to 2.5 feet
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: High
Parent material: Residuum weathered from a mixture of felsic and intermediate igneous or high-grade metamorphic rocks, such as aplitic granite, granite gneiss, or metadacite that is cut with dikes of gabbro and diorite

Minor Components

- Areas of Appling, Cecil, Enon, Madison, Mecklenburg, Pacolet, Wedowee, and Zion soils
- Soils that have a surface layer of loamy coarse sand
- Soils that are moderately acid to neutral in the subsoil and have base saturation greater than 35 percent
- Soils that have a solum that is less than 40 inches thick
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 15 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility and wetness

Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility and wetness
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Slow permeability in the subsoil, wetness, and slope
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential and wetness
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.
- Installing a drainage system for the foundation and slab and landscaping so that surface runoff is diverted can reduce the risk of damage from wetness.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential, low strength, and wetness
Management measures and considerations:
- Removing as much of the clay as possible and increasing the thickness of the base aggregate help to improve soil performance.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Constructing roads on raised and compacted fill material helps to overcome the wetness limitation.

- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

HnB—Herndon very fine sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 160 acres

Typical Profile

Surface layer:
0 to 4 inches—pale brown very fine sandy loam

Subsurface layer:
4 to 11 inches—light yellowish brown very fine sandy loam

Subsoil:
11 to 23 inches—brownish yellow silty clay loam that has few yellowish red mottles
23 to 30 inches—brownish yellow silty clay that has many red and common very pale brown mottles
30 to 38 inches—brownish yellow clay that has common red and common very pale brown mottles
38 to 50 inches—brownish yellow silty clay loam that has many red and many very pale brown mottles

Substratum:
50 to 60 inches—brownish yellow saprolite that crushes to silt loam and has many red and many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained crystalline rocks

Minor Components

- Areas of Badin, Georgeville, Pageland, and Zion soils

- Soils that have a solum that is thinner than that of the Herndon soil
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

HnC—Herndon very fine sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 80 acres

Typical Profile

Surface layer:
0 to 4 inches—pale brown very fine sandy loam

Subsurface layer:
4 to 11 inches—light yellowish brown very fine sandy loam

Subsoil:
11 to 23 inches—brownish yellow silty clay loam that has few yellowish red mottles
23 to 30 inches—brownish yellow silty clay that has many red and common very pale brown mottles
30 to 38 inches—brownish yellow clay that has common red and common very pale brown mottles
38 to 50 inches—brownish yellow silty clay loam that has many red and many very pale brown mottles

Substratum:
50 to 60 inches—brownish yellow saprolite that crushes to silt loam and has many red and many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from Carolina Slates and other fine grained crystalline rocks

Minor Components

- Areas of Badin, Georgeville, Pageland, and Zion soils
- Soils that have a solum that is thinner than that of the Herndon soil
- Soils that have an eroded surface layer
- Soils that have slopes greater than 10 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.

- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

LdB—Lloyd loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 45 acres

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown loam

Subsoil:
6 to 11 inches—dark reddish brown sandy clay
11 to 43 inches—dark red clay
43 to 53 inches—red sandy clay
53 to 60 inches—red sandy clay loam that has few reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum derived from intermediate and mafic, igneous and high-grade metamorphic rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Madison, Mecklenburg, and Pacolet soils
- Soils that have a solum that is thinner than that of the Lloyd soil
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility

Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

LdC—Lloyd loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders

Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 30 acres

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown loam

Subsoil:
6 to 11 inches—dark reddish brown sandy clay
11 to 43 inches—dark red clay
43 to 53 inches—red sandy clay
53 to 60 inches—red sandy clay loam that has few reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum derived from intermediate and mafic, igneous and high-grade metamorphic rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Madison, Mecklenburg, and Pacolet soils
- Soils that have an eroded surface layer
- Soils that have a solum that is thinner than that of the Lloyd soil
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

LeC2—Lloyd clay loam, 6 to 10 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Sloping

Slope topography: Smooth and convex
Size of areas: 5 to 35 acres

Typical Profile

Surface layer:
0 to 3 inches—dark reddish brown clay loam

Subsoil:
3 to 24 inches—dark red clay
24 to 39 inches—dark red sandy clay
39 to 44 inches—reddish brown sandy clay
44 to 50 inches—reddish brown clay loam

Substratum:
50 to 60 inches—yellowish red saprolite that crushes to clay loam and has many reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Moderate
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum derived from intermediate and mafic, igneous and high-grade metamorphic rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Madison, Mecklenburg, and Pacolet soils
- Soils that have a solum that is thinner than that of the Lloyd soil
- Soils that have an uneroded surface layer
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility and high content of clay
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.
- Incorporating crop residue into the soil or leaving residue on the soil surface and restricting tillage to periods when the soil is not wet help to minimize clodding and crusting and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited

Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling mortality
Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

LeE2—Lloyd clay loam, 10 to 25 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 25 acres

Typical Profile

Surface layer:
0 to 3 inches—dark reddish brown clay loam

Subsoil:
3 to 24 inches—dark red clay
24 to 39 inches—dark red sandy clay
39 to 44 inches—reddish brown sandy clay
44 to 50 inches—reddish brown clay loam

Substratum:
50 to 60 inches—yellowish red saprolite that crushes to clay loam and has many reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Moderate
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum derived from intermediate and mafic, igneous and high-grade metamorphic rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Madison, Mecklenburg, and Pacolet soils
- Soils that have a solum that is thinner than that of the Lloyd soil
- Soils that have bedrock within a depth of 60 inches
- Soils that have an uneroded surface layer
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited

Management concerns: Slope

Pasture and hayland
Suitability: Poorly suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.

- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 7R, based on loblolly pine as the indicator species

LxC—Lloyd-Urban land complex, 2 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits and shoulders
Slope: Gently sloping or sloping
Slope topography: Smooth and convex
Size of areas: 5 to 25 acres

Composition

Pattern of occurrence: Lloyd soil and Urban land occur as areas too intermingled to be mapped separately at the selected scale
Lloyd soil and similar soils—45 percent
Urban land—35 percent
Minor soils—20 percent

Typical Profile

Lloyd
Surface layer:
0 to 6 inches—dark reddish brown loam

Subsoil:
6 to 11 inches—dark reddish brown sandy clay
11 to 43 inches—dark red clay
43 to 53 inches—red sandy clay
53 to 60 inches—red sandy clay loam that has few reddish yellow mottles

Urban land

Urban land consists of areas that are covered with roads, parking lots, closely spaced houses, buildings, or other structures. Identification of the soils in these areas is not feasible because they are covered or altered.

Properties and Qualities of the Lloyd Soil

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium or rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum derived from intermediate and mafic, igneous and high-grade metamorphic rocks

Minor Components

- Soils that have an eroded surface layer
- Soils that have a solum that is thinner than that of the Lloyd soil
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Urban land
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for crop production because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.

Pasture and hayland
Suitability: Poorly suited
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for the production of pasture and hay crops because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Limited size of areas
Management measures and considerations:
- This map unit is difficult to manage for timber production because of the limited size of its areas, intermittent areas of Urban land, and areas of highly disturbed soils.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.

- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: Lloyd—IIIe; Urban land—none assigned
Woodland ordination symbol: Lloyd—8A, based on loblolly pine as the indicator species; Urban land—none assigned

MaB—Madison sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 60 acres

Typical Profile

Surface layer:
0 to 5 inches—yellowish red sandy loam

Subsoil:
5 to 7 inches—red sandy clay loam
7 to 25 inches—red sandy clay
25 to 37 inches—red sandy clay loam

Substratum:
37 to 60 inches—red saprolite that crushes to sandy clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic and intermediate, micaceous high-grade metamorphic rocks

Minor Components

- Areas of Appling, Cecil, Helena, Lloyd, Mecklenburg, Pacolet, and Wedowee soils
- Soils that have an eroded surface layer
- Soils that have a solum that is thinner than that of the Madison soil
- Areas of rock outcrops
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

MaC—Madison sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 75 acres

Typical Profile

Surface layer:
0 to 5 inches—yellowish red sandy loam

Subsoil:
5 to 7 inches—red sandy clay loam
7 to 25 inches—red sandy clay
25 to 37 inches—red sandy clay loam

Substratum:
37 to 60 inches—red saprolite that crushes to sandy clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic and intermediate, micaceous high-grade metamorphic rocks

Minor Components

- Areas of Appling, Cecil, Helena, Lloyd, Mecklenburg, Pacolet, and Wedowee soils
- Soils that have a solum that is thinner than that of the Madison soil
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer
- Areas of rock outcrops

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Moderately suited

Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

MaE—Madison sandy loam, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 80 acres

Typical Profile

Surface layer:
0 to 5 inches—yellowish red sandy loam

Subsoil:
5 to 7 inches—red sandy clay loam
7 to 25 inches—red sandy clay
25 to 37 inches—red sandy clay loam

Substratum:
37 to 60 inches—red saprolite that crushes to sandy clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic and intermediate, micaceous high-grade metamorphic rocks

Minor Components

- Areas of Appling, Cecil, Helena, Lloyd, Mecklenburg, Pacolet, and Wedowee soils
- Soils that have a solum that is thinner than that of the Madison soil
- Soils that have bedrock within a depth of 60 inches
- Soils that have an eroded surface layer
- Areas of rock outcrops
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Pasture and woodland
Other Uses: Unmanaged woodland

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.

- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

MdC2—Madison sandy clay loam, 6 to 10 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 40 acres

Typical Profile

Surface layer:
0 to 4 inches—yellowish red sandy clay loam

Subsoil:
4 to 16 inches—red sandy clay
16 to 30 inches—red clay loam

Substratum:
30 to 60 inches—red saprolite that crushes to clay loam and loam and has common reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Moderate
Hazard of water erosion: High
Organic matter content: Low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic and intermediate, micaceous high-grade metamorphic rocks

Minor Components

- Areas of Appling, Cecil, Helena, Lloyd, Mecklenburg, Pacolet, and Wedowee soils
- Soils that have a solum that is thinner than that of the Madison soil
- Soils that have bedrock within a depth of 60 inches
- Soils that have an uneroded surface layer
- Areas of rock outcrops

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility and high content of clay
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.
- Incorporating crop residue into the soil or leaving residue on the soil surface and restricting tillage to periods when the soil is not wet help to minimize clodding and crusting and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use, seedling mortality, and competition from undesirable plants
Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

MdE2—Madison sandy clay loam, 10 to 25 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Landscape features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 80 acres

Typical Profile

Surface layer:
0 to 4 inches—yellowish red sandy clay loam

Subsoil:
4 to 16 inches—red sandy clay
16 to 30 inches—red clay loam

Substratum:
30 to 60 inches—red saprolite that crushes to clay loam and loam and has common reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid

Extent of erosion: Moderate
Hazard of water erosion: Very high
Organic matter content: Low
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic and intermediate, micaceous high-grade metamorphic rocks

Minor Components

- Areas of Appling, Cecil, Helena, Lloyd, Mecklenburg, Pacolet, and Wedowee soils
- Soils that have a solum that is thinner than that of the Madison soil
- Soils that have bedrock within a depth of 60 inches
- Soils that have an uneroded surface layer
- Areas of rock outcrops
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Poorly suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, seedling mortality, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 7R, based on loblolly pine as the indicator species

MkB—Mecklenburg sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 90 acres

Typical Profile

Surface layer:
0 to 8 inches—reddish brown sandy loam

Subsoil:
8 to 15 inches—yellowish red clay
15 to 27 inches—red clay that has few yellowish red mottles
27 to 32 inches—yellowish red clay loam that has many strong brown mottles

Substratum:
32 to 50 inches—red saprolite that crushes to clay loam and has many yellowish red and many strong brown mottles
50 to 60 inches—yellowish red saprolite that crushes to loam and has many strong brown and many yellowish brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Moderate
Parent material: Residuum weathered from intermediate and mafic crystalline rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Helena, Lloyd, Madison, Wilkes, and Zion soils
- Soils that have a solum that is thinner than that of the Mecklenburg soil
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and competition from undesirable plants
Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.

- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slow permeability in the subsoil
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

MkC—Mecklenburg sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 115 acres

Typical Profile

Surface layer:
0 to 8 inches—reddish brown sandy loam

Subsoil:
8 to 15 inches—yellowish red clay
15 to 27 inches—red clay that has few yellowish red mottles
27 to 32 inches—yellowish red clay loam that has many strong brown mottles

Substratum:
32 to 50 inches—red saprolite that crushes to clay loam and has many yellowish red and many strong brown mottles
50 to 60 inches—yellowish red saprolite that crushes to loam and has many strong brown and many yellowish brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Moderate
Parent material: Residuum weathered from intermediate and mafic crystalline rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Lloyd, Madison, Wilkes, and Zion soils
- Soils that have a solum that is thinner than that of the Mecklenburg soil
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and competition from undesirable plants
Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slow permeability in the subsoil
Management measures and considerations:
• The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
• Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.
• Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
• Providing sand and gravel and compacting roadbeds improve soil strength.
• Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
• Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

MkE—Mecklenburg sandy loam, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 40 acres

Typical Profile

Surface layer:
0 to 8 inches—reddish brown sandy loam

Subsoil:
8 to 15 inches—yellowish red clay
15 to 27 inches—red clay that has few yellowish red mottles
27 to 32 inches—yellowish red clay loam that has many strong brown mottles

Substratum:
32 to 50 inches—red saprolite that crushes to clay loam and has many yellowish red and many strong brown mottles

50 to 60 inches—yellowish red saprolite that crushes to loam and has many strong brown and many yellowish brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Moderate
Parent material: Residuum weathered from intermediate and mafic crystalline rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Lloyd, Madison, Wilkes, and Zion soils
- Soils that have a solum that is thinner than that of the Mecklenburg soil
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.

- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slow permeability in the subsoil and slope
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 7R, based on loblolly pine as the indicator species

MnC2—Mecklenburg sandy clay loam, 6 to 10 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 100 acres

Typical Profile

Surface layer:
0 to 2 inches—reddish brown sandy clay loam

Subsoil:
2 to 22 inches—red clay
22 to 37 inches—red clay loam that has common reddish yellow mottles

Substratum:
37 to 50 inches—red saprolite that crushes to sandy clay loam and has many reddish yellow mottles
50 to 60 inches—yellowish red saprolite that crushes to loam and has many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Surface runoff: Rapid
Extent of erosion: Moderate
Hazard of water erosion: High
Organic matter content: Low
Available water capacity: Moderate
Shrink-swell potential: Moderate
Parent material: Residuum weathered from intermediate and mafic crystalline rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Lloyd, Madison, Wilkes, and Zion soils
- Soils that have a solum that is thinner than that of the Mecklenburg soil
- Soils that have an uneroded surface layer
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use, erodibility, seedling mortality, and competition from undesirable plants

Management measures and considerations:
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slow permeability in the subsoil and slope
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

MnE2—Mecklenburg sandy clay loam, 10 to 25 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes

Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Strongly sloping to moderately steep
Slope topography: Complex
Size of areas: 5 to 120 acres

Typical Profile

Surface layer:
0 to 2 inches—reddish brown sandy clay loam

Subsoil:
2 to 22 inches—red clay
22 to 37 inches—red clay loam that has common reddish yellow mottles

Substratum:
37 to 50 inches—red saprolite that crushes to sandy clay loam and has many reddish yellow mottles
50 to 60 inches—yellowish red saprolite that crushes to loam and has many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Surface runoff: Very rapid
Extent of erosion: Moderate
Hazard of water erosion: Very high
Organic matter content: Low
Available water capacity: Moderate
Shrink-swell potential: Moderate
Parent material: Residuum weathered from intermediate and mafic crystalline rocks

Minor Components

- Areas of Cecil, Enon, Georgeville, Lloyd, Madison, Wilkes, and Zion soils
- Soils that have a solum that is thinner than that of the Mecklenburg soil
- Soils that have an uneroded surface layer
- Soils that have bedrock within a depth of 60 inches
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Poorly suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.

- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, seedling mortality, and competition from undesirable plants
Management measures and considerations:

- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slow permeability in the subsoil and slope
Management measures and considerations:

- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:

- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:

- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 6R, based on loblolly pine as the indicator species

PaB—Pacolet fine gravelly loamy coarse sand, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 80 acres

Typical Profile

Surface layer:
0 to 6 inches—brown fine gravelly loamy coarse sand

Subsoil:
6 to 8 inches—yellowish red sandy clay loam
8 to 26 inches—red sandy clay
26 to 29 inches—red sandy clay loam that has common reddish yellow mottles

Substratum:
29 to 60 inches—reddish yellow saprolite that crushes to sandy clay loam and has many red and many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Low or moderately low
Available water capacity: Low or moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from porphorytic granite rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of sandy loam
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches
- Areas of porphyritic granite outcrops

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited (fig. 3)
Management concerns: Erodibility

Figure 3.—Wheat in an area of Pacolet fine gravelly loamy coarse sand, 2 to 6 percent slopes.

Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:

- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PaC—Pacolet fine gravelly loamy coarse sand, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 120 acres

Typical Profile

Surface layer:
0 to 6 inches—brown fine gravelly loamy coarse sand

Subsoil:
6 to 8 inches—yellowish red sandy clay loam
8 to 26 inches—red sandy clay
26 to 29 inches—red sandy clay loam that has common reddish yellow mottles

Substratum:
29 to 60 inches—reddish yellow saprolite that crushes to sandy clay loam and has many red and many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight

Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Low or moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from porphorytic granite rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of sandy loam
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches
- Areas of porphyritic granite outcrops

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.

- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PaE—Pacolet fine gravelly loamy coarse sand, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 75 acres

Typical Profile

Surface layer:
0 to 6 inches—brown fine gravelly loamy coarse sand

Subsoil:
6 to 8 inches—yellowish red sandy clay loam
8 to 26 inches—red sandy clay
26 to 29 inches—red sandy clay loam that has common reddish yellow mottles

Substratum:
29 to 60 inches—reddish yellow saprolite that crushes to sandy clay loam and has many red and many very pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid

Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Low or moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from porphorytic granite rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of sandy loam
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches
- Areas of porphyritic granite outcrops
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility and equipment use
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.

- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

PcB—Pacolet sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 45 acres

Typical Profile

Surface layer:
0 to 5 inches—brown sandy loam

Subsoil:
5 to 7 inches—red sandy clay loam
7 to 19 inches—red sandy clay
19 to 24 inches—light red sandy clay that has common red mottles
24 to 37 inches—yellowish red sandy clay loam that has common red mottles

Substratum:
37 to 60 inches—red saprolite that crushes to sandy clay loam and has many reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained

Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of fine gravelly loamy coarse sand
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PcC—Pacolet sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 60 acres

Typical Profile

Surface layer:
0 to 5 inches—brown sandy loam

Subsoil:
5 to 7 inches—red sandy clay loam
7 to 19 inches—red sandy clay
19 to 24 inches—light red sandy clay that has common red mottles
24 to 37 inches—yellowish red sandy clay loam that has common red mottles

Substratum:
37 to 60 inches—red saprolite that crushes to sandy clay loam and has many reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of fine gravelly loamy coarse sand
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns:
- There are no significant limitations affecting woodland management.

Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope

Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PcE—Pacolet sandy loam, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 115 acres

Typical Profile

Surface layer:
0 to 5 inches—brown sandy loam

Subsoil:
5 to 7 inches—red sandy clay loam
7 to 19 inches—red sandy clay
19 to 24 inches—light red sandy clay that has common red mottles
24 to 37 inches—yellowish red sandy clay loam that has common red mottles

Substratum:
37 to 60 inches—red saprolite that crushes to sandy clay loam and has many reddish yellow mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of fine gravelly loamy coarse sand
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches

- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility and equipment use
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope

Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

PeC2—Pacolet sandy clay loam, 6 to 10 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 30 acres

Typical Profile

Surface layer:
0 to 5 inches—yellowish red sandy clay loam

Subsoil:
5 to 18 inches—red sandy clay
18 to 25 inches—red sandy clay loam that has common reddish yellow mottles

Substratum:
25 to 37 inches—light red saprolite that crushes to sandy clay loam
37 to 60 inches—reddish yellow saprolite that crushes to coarse sandy loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Moderate
Hazard of water erosion: High
Organic matter content: Low
Available water capacity: Low or moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of fine gravelly loamy coarse sand

- Soils that have an uneroded surface layer
- Soils that have bedrock within a depth of 60 inches

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and unmanaged woodland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and seedling mortality
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Moderately suited
Management concerns: Slope

Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

PeE2—Pacolet sandy clay loam, 10 to 25 percent slopes, eroded

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Landform features: Many shallow gullies and a few deep gullies which form an intricate pattern
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 80 acres

Typical Profile

Surface layer:
0 to 5 inches—yellowish red sandy clay loam

Subsoil:
5 to 18 inches—red sandy clay
18 to 25 inches—red sandy clay loam that has common reddish yellow mottles

Substratum:
25 to 37 inches—light red saprolite that crushes to sandy clay loam
37 to 60 inches—reddish yellow saprolite that crushes to coarse sandy loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Moderate
Hazard of water erosion: Very high
Organic matter content: Low
Available water capacity: Low or moderate

Shrink-swell potential: Low
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Lloyd, Madison, Rion, Wake, Wateree, and Wedowee soils
- Soils that have a surface layer of fine gravelly loamy coarse sand
- Soils that have an uneroded surface layer
- Soils that have bedrock within a depth of 60 inches
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Poorly suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and seedling mortality
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Moderate permeability in the subsoil and slope
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.

- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 6R, based on loblolly pine as the indicator species

PfE—Pacolet-Udorthents complex, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Landform features: Many shallow gullies and few deep gullies which form an intricate pattern
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 10 acres

Composition

Pacolet soil and similar soils—40 percent
Udorthents—40 percent
Minor soils—20 percent

Typical Profile

Pacolet
Surface layer:
0 to 5 inches—yellowish red sandy clay loam

Subsoil:
5 to 18 inches—red sandy clay
18 to 25 inches—red sandy clay loam that has common reddish yellow mottles

Substratum:
25 to 37 inches—light red saprolite that crushes to sandy clay loam
37 to 60 inches—reddish yellow saprolite that crushes to coarse sandy loam

Udorthents

Individual areas of Udorthents consist of gullies cutting through areas that once consisted of the Pacolet soil. Subsoil or substratum material is exposed along the walls of the gullies. This material is clayey and loamy. A typical profile is not given.

Properties and Qualities of the Pacolet Soil

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Severe
Hazard of water erosion: Very high
Organic matter content: Low
Available water capacity: Low or moderate
Shrink-swell potential: Low
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Appling, Cecil, Georgeville, Madison, Mecklenburg, Rion, and Wedowee soils
- Soils that have a solum that is thinner than that of the Pacolet soil
- Soils that have bedrock within a depth of 60 inches
- Soils that have an uneroded surface layer
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Irregular, complex slopes and gullies

Pasture and hayland
Suitability: Poorly suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- If gullies are filled and the area smoothed, pastures can be established.
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility and equipment use
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.

- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Slope and areas of highly disturbed soils
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Slope and areas of highly disturbed soils

Local roads and streets
Suitability: Unsuited
Management concerns: Slope and areas of highly disturbed soils

Interpretive Groups

Land capability classification: Pacolet—VIIe; Udorthents—none assigned
Woodland ordination symbol: Pacolet—6R, based on loblolly pine as the indicator species; Udorthents—none assigned

PgB—Pageland silt loam, 0 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: Interstream divides and areas around the head of drainageways
Slope: Nearly level or gently sloping
Slope topography: Smooth and concave
Size of areas: 5 to 20 acres

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown silt loam

Subsoil:
3 to 12 inches—light olive brown silty clay loam
12 to 20 inches—yellowish brown silty clay loam that has few brown mottles
20 to 26 inches—light yellowish brown silty clay loam that has common strong brown and common light brownish gray mottles

Substratum:
26 inches—multicolored yellowish red and yellowish brown weathered, fractured slate that has few widely spaced seams of light brownish gray silty clay loam in fractures

Soil Properties and Qualities

Depth class: Moderately deep to bedrock
Drainage class: Moderately well drained

Permeability: Moderately slow
Depth to high water table: 1.5 to 3.0 feet
Surface runoff: Slow or medium
Extent of erosion: Slight
Hazard of water erosion: Low or moderate
Organic matter content: Low or moderately low
Available water capacity: Low
Shrink-swell potential: Low
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: More than 40 inches
Parent material: Residuum weathered from Carolina Slates and other fine grained metamorphic rocks

Minor Components

- Areas of Badin, Chewacla, Georgeville, and Herndon soils
- Soils that are shallow to bedrock
- Areas of poorly drained soils
- Soils that have slopes greater than 6 percent
- Soils that have base saturation greater than 35 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility, wetness, and depth to bedrock
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and growing shallow-rooted crops helps to overcome the rooting depth limitation.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Wetness and depth to bedrock
Management measures and considerations:
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.
- Shallow-rooted grasses and legumes that are adapted to droughty conditions resulting from the depth to bedrock should be selected for planting.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.

- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Depth to bedrock, wetness, and the moderately slow permeability in the subsoil
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
- Installing a drainage system for the foundation and slab and landscaping so that surface runoff is diverted can reduce the risk of damage from wetness.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 6W, based on loblolly pine as the indicator species

Pr—Pits, quarry

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits, shoulders, and backslopes
Slope: 6 to 15 percent slopes
Slope topography: Irregular
Size of areas: 5 to 20 acres

Typical Profile

This map unit consists of areas of excavations in granite bedrock that are 25 to 100 feet deep. Surface soil and subsoil materials and granite blocks are stockpiled near the quarry pits. Materials quarried from the excavation area are transported to a center where they are cut and shaped into building and construction materials. The materials in this map unit are highly variable, and a typical pedon is not given.

Interpretive Groups

Land capability classification: None assigned
Woodland ordination symbol: None assigned

RaE—Rion-Ashlar-Wake complex, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Rion—backslopes and footslopes; Ashlar—backslopes and toeslopes; Wake—areas near rock outcrops
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 100 acres

Composition

Pattern of occurrence: Soils in this map unit occur as areas too intermingled to be mapped separately at the selected scale
Rion soil and similar soils—34 percent
Ashlar soil and similar soils—33 percent
Wake soil and similar soils—21 percent
Dissimilar soils—12 percent

Typical Profile

Rion
Surface layer:
1 inch to 0—slightly decomposed leaves, needles, and twigs
0 to 4 inches—brown fine gravelly sandy loam

Subsurface layer:
4 to 10 inches—yellowish brown fine gravelly sandy loam

Subsoil:
10 to 13 inches—strong brown fine gravelly sandy loam
13 to 21 inches—red fine gravelly sandy clay loam
21 to 23 inches—red fine gravelly sandy loam

Substratum:
23 to 60 inches—red saprolite that crushes to fine gravelly sandy loam and has many strong brown mottles

Ashlar
Surface layer:
0 to 8 inches—dark grayish brown fine gravelly loamy coarse sand

Subsurface layer:
8 to 13 inches—brown fine gravelly loamy coarse sand

Subsoil:
13 to 27 inches—brownish yellow fine gravelly coarse sandy loam

Substratum:
27 inches—unweathered, multicolored porphyrytic granite bedrock

Wake
Surface layer:
0 to 4 inches—brown fine gravelly loamy coarse sand

Substratum:
4 to 10 inches—yellowish brown fine gravelly loamy coarse sand
10 to 17 inches—light yellowish brown fine gravelly loamy coarse sand

Bedrock:
17 inches—unweathered light-colored granite

Soil Properties and Qualities

Depth class: Rion—very deep to bedrock; Ashlar—moderately deep to bedrock; Wake—shallow to bedrock
Drainage class: Rion—well drained; Ashlar and Wake—excessively drained
Permeability: Ashlar and Rion—moderately rapid; Wake—rapid
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Rion—low or moderately low; Ashlar and Wake—low
Available water capacity: Rion—low or moderate; Ashlar and Wake—very low
Shrink-swell potential: Low
Depth to bedrock: Rion—more than 60 inches; Ashlar—20 to 40 inches; Wake—8 to 20 inches
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Appling, Cecil, Pacolet, Wateree, and Wedowee soils
- Soils that have an eroded surface layer
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent
- Areas of granite outcrops

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Rion—equipment use and erodibility; Ashlar and Wake—equipment use, erodibility, and depth to bedrock
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Shallow-rooted grasses and legumes that are adapted to droughty conditions resulting from the depth to bedrock should be selected for planting.

Woodland
Productivity class: Rion and Ashlar—moderately high for loblolly pine; Wake—moderate for loblolly pine
Management concerns: Rion—erodibility, equipment use, and seedling mortality; Ashlar and Wake—erodibility, equipment use, seedling mortality, and windthrow hazard
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.

- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Planting seedlings between December and March helps to increase plant survival rates.
- In areas of the Ashlar and Wake soils, periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Rion—moderately suited; Ashlar and Wake—unsuited
Management concerns: Rion—slope; Ashlar and Wake—slope and depth to bedrock
Management measures and considerations:
- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- Septic tank absorption fields located on the deeper included soils may perform better than those located on the major soils.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Rion—slope; Ashlar and Wake—slope and depth to bedrock
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.
- Excavation and removal of hard bedrock or the use of special earthmoving equipment is needed for foundation construction.

Local roads and streets
Suitability: Poorly suited
Management concerns: Rion—slope; Ashlar and Wake—slope and depth to bedrock
Management measures and considerations:
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Blasting or using special grading equipment to remove hard bedrock may be necessary for road construction.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: Rion and Ashlar—VIe; Wake—VIs
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8R in areas of the Rion and Ashlar soils and 5D in areas of the Wake soil

ReC—Rion-Wateree-Wake complex, 2 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills

Landform position: Rion—summits; Wateree—shoulders; Wake—knolls and areas near rock outcrops
Slope: Gently sloping or sloping
Slope topography: Smooth and convex
Size of areas: 5 to 40 acres

Composition

Pattern of occurrence: Soils in this map unit occur as areas too intermingled to be mapped separately at the selected scale
Rion soil and similar soils—39 percent
Wateree soil and similar soils—26 percent
Wake soil and similar soils—23 percent
Dissimilar soils—12 percent

Typical Profile

Rion
Surface layer:
1 inch to 0—slightly decomposed leaves, needles, and twigs
0 to 4 inches—brown fine gravelly sandy loam

Subsurface layer:
4 to 10 inches—yellowish brown fine gravelly sandy loam

Subsoil:
10 to 13 inches—strong brown fine gravelly sandy loam
13 to 21 inches—red fine gravelly sandy clay loam
21 to 23 inches—red fine gravelly sandy loam

Substratum:
23 to 60 inches—red saprolite that crushes to fine gravelly sandy loam and has many strong brown mottles

Wateree
Surface layer:
0 to 6 inches—brown fine gravelly loamy sand

Subsurface layer:
6 to 9 inches—light yellowish brown fine gravelly loamy sand

Subsoil:
9 to 12 inches—light yellowish brown fine gravelly sandy loam
12 to 25 inches—strong brown fine gravelly sandy loam that has common strong brown mottles

Substratum:
25 to 43 inches—strong brown weathered bedrock that crushes to fine gravelly coarse sandy loam
43 inches—unweathered, multicolored porphyritic granite bedrock

Wake
Surface layer:
0 to 4 inches—brown fine gravelly loamy coarse sand

Substratum:
4 to 10 inches—yellowish brown fine gravelly loamy coarse sand
10 to 17 inches—light yellowish brown fine gravelly loamy coarse sand

Bedrock:
17 inches—unweathered light-colored granite

Soil Properties and Qualities

Depth class: Rion—very deep to bedrock; Wateree—moderately deep to bedrock; Wake—shallow to bedrock
Drainage class: Rion and Wateree—well drained; Wake—excessively drained
Permeability: Rion and Wateree—moderately rapid; Wake—rapid
Surface runoff: Medium or rapid
Extent of erosion: Slight
Hazard of water erosion: Moderate or high
Organic matter content: Rion—low or moderately low; Wateree and Wake—low
Available water capacity: Rion—low or moderate; Wateree and Wake—very low
Shrink-swell potential: Low
Depth to bedrock: Rion—more than 60 inches; Wateree—20 to 40 inches to soft bedrock, 40 to more than 60 inches to hard bedrock; Wake—8 to 20 inches to hard bedrock
Parent material: Residuum weathered from felsic crystalline rocks

Minor Components

- Areas of Ashlar, Appling, Cecil, Pacolet, and Wedowee soils
- Soils that have an eroded surface layer
- Soils that have slopes greater than 10 percent
- Areas of granite outcrops

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Rion—moderately suited; Wateree and Wake—poorly suited
Management concerns: Rion—erodibility; Wake and Wateree—erodibility, depth to bedrock, and droughtiness
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and growing shallow-rooted crops helps to overcome the rooting depth limitation of the Wake and Wateree soils.
- In areas of the Wake and Wateree soils, implementing a program of crop residue management and no-till farming helps to improve the water-holding capacity.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Rion—erodibility; Wateree and Wake—erodibility and depth to bedrock
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

- In areas of the Wateree and Wake soils, shallow-rooted grasses and legumes that are adapted to droughty conditions resulting from the depth to bedrock and sandy surface layer should be selected for planting.

Woodland

Productivity class: Rion and Wateree—moderately high for loblolly pine; Wake—moderate for loblolly pine

Management concerns: Rion—no significant limitations; Wateree and Wake—windthrow hazard and seedling mortality

Management measures and considerations:

- In areas of the Wateree and Wake soils, periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Maintaining surface litter, which increases water infiltration and minimizes evaporation, helps to reduce seedling mortality rates.
- Planting seedlings between December and March helps to increase plant survival rates.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields

Suitability: Rion—moderately suited; Wateree and Wake—unsuited

Management concerns: Rion—slope; Wateree and Wake—slope and depth to bedrock

Management measures and considerations:

- Installing distribution lines on the contour helps to improve performance of septic tank absorption fields.
- Septic tank absorption fields located on the deeper included soils may perform better than those located on the major soils.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings

Suitability: Moderately suited

Management concerns: Rion—slope; Wateree and Wake—slope and depth to bedrock

Management measures and considerations:

- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.
- Drilling and blasting of rock or special earthmoving equipment is needed in areas of the Wake soil.

Local roads and streets

Suitability: Poorly suited

Management concerns: Rion—slope; Wateree and Wake—slope and depth to bedrock

Management measures and considerations:

- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Blasting or using special grading equipment to remove hard bedrock may be necessary for road construction.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: Rion—IIIe; Wateree—IVe; Wake—IVs
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8A in areas of the Rion soil, 7A in areas of the Wateree soil, and 5D in areas of the Wake soil

Ro—Roanoke silt loam, occasionally flooded

Setting

Landscape: Piedmont
Landform: Flood plains and low stream terraces
Slope: Nearly level
Slope topography: Slightly concave
Size of areas: 5 to 10 acres

Typical Profile

Surface layer:
0 to 2 inches—grayish brown silt loam

Subsurface layer:
2 to 8 inches—grayish brown loam that has common brown mottles

Subsoil:
8 to 44 inches—gray clay that has common yellowish brown mottles
44 to 50 inches—gray sandy clay loam that has few yellowish brown mottles

Underlying material:
50 to 60 inches—light brownish gray sandy clay loam that has few light yellowish brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Poorly drained
Permeability: Slow
Depth to high water table: 0 to 1.0 foot
Frequency of flooding: Occasional
Surface runoff: Slow
Extent of erosion: Slight
Hazard of water erosion: Low
Organic matter content: Low or moderately low
Available water capacity: Moderate or high
Shrink-swell potential: Moderate
Parent material: Clayey alluvial sediments

Minor Components

- Areas of Altavista, Cartecay, Chewacla, Fork, Wehadkee, and Wickham soils
- Soils that are not as clayey as the Roanoke soil
- Areas of very poorly drained soils

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Delayed planting may be needed due to the flooding hazard in early spring and the high water table.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Hay bales should be moved to areas outside the flood zone.
- Limiting grazing and equipment use to periods when the soil is not too wet helps to prevent rutting and soil compaction.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use, seedling mortality, and competition from undesirable plants
Management measures and considerations:
- Restricting the use of wheeled or tracked equipment to periods when the soil is not wet helps to prevent rutting, erosion, and sedimentation.
- Site preparation practices, including chopping, applying herbicides, harrowing, and bedding, help to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.
- Maintaining drainageways and planting trees that are tolerant of wetness help to increase seedling survival rates.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding, wetness, and slow permeability in the subsoil
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness

Local roads and streets
Suitability: Poorly suited
Management concerns: Flooding, wetness, and low strength
Management measures and considerations:
- Compacted fill material can be used as road base to raise roads above the level of flooding and reduce the wetness limitation.

- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 7W, based on sweetgum as the indicator species

Sh—Shellbluff silt loam, occasionally flooded

Setting

Landscape: Piedmont
Landform: Flood plains
Slope: 0 to 2 percent
Slope topography: Smooth
Size of areas: 5 to 175 acres

Typical Profile

Surface layer:
0 to 3 inches—brown silt loam

Subsoil:
3 to 11 inches—brown silt loam
11 to 26 inches—brown silt loam that has common strong brown mottles

Buried surface and subsoil layers:
26 to 37 inches—very dark grayish brown silt loam
37 to 41 inches—dark grayish brown silt loam
41 to 52 inches—yellowish brown silt loam that has common strong brown and common light brownish gray mottles

Buried substratum:
52 to 60 inches—brown loam that has common strong brown and many light brownish gray mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Moderate
Depth to high water table: 3.0 to 5.0 feet
Frequency of flooding: Occasional
Surface runoff: Slow
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Low to moderate
Available water capacity: Moderate to very high
Shrink-swell potential: Low
Parent material: Silty alluvial sediments

Minor Components

- Areas of Altavista, Cartecay, Chewacla, Fork, Toccoa, Wehadkee, and Wickham soils

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Flooding
Management measures and considerations:
- Delayed planting may be needed due to the flooding hazard in early spring.

Pasture and hayland
Suitability: Well suited
Management concerns: Flooding
Management measures and considerations:
- Hay bales should be moved to areas outside the flood zone.

Woodland
Productivity class: High for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Flooding

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and flooding
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Compacted fill material can be used as road base to raise roads above the level of flooding.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 10A, based on loblolly pine as the indicator species

To—Toccoa loam, occasionally flooded

Setting

Landscape: Piedmont
Landform: Flood plains
Slope: 0 to 2 percent
Slope topography: Smooth
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 2 inches—brown loam
2 to 8 inches—reddish brown silt loam

Underlying material:
8 to 17 inches—reddish brown sandy loam that has thin strata of fine sandy loam and loam
17 to 30 inches—reddish brown loam that has thin strata of loamy sand and silt loam
30 to 52 inches—brown fine sandy loam that has thin strata of loamy sand
52 to 60 inches—brownish yellow loamy sand

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Moderately rapid
Depth to high water table: 2.5 to 5.0 feet
Frequency of flooding: Occasional
Surface runoff: Slow
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Moderately low
Available water capacity: Low or moderate
Shrink-swell potential: Low
Parent material: Loamy alluvial sediments

Minor Components

- Areas of Altavista, Cartecay, Chewacla, Fork, Shellbluff, Wehadkee, and Wickham soils
- Areas of coarse soils that are similar to the Toccoa soil, are droughty, and mainly occur on the edges of streambanks
- Areas of similar soils that have buried loamy A and B horizons below a depth of 25 inches

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Flooding

Management measures and considerations:
- Delayed planting may be needed due to the flooding hazard in early spring.

Pasture and hayland
Suitability: Well suited
Management concerns: Flooding
Management measures and considerations:
- Hay bales should be moved to areas outside the flood zone.

Woodland
Productivity class: High for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Flooding

Local roads and streets
Suitability: Poorly suited
Management concerns: Flooding
Management measures and considerations:
- Compacted fill material can be used as road base to raise roads above the level of flooding.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

Ue—Udorthents, excavated

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits, shoulders, and toeslopes
Slope: 2 to 10 percent

Slope topography: Irregular, commonly concave
Shape of areas: Irregular
Size of areas: 5 to 30 acres

Typical Profile

This map unit consists of areas of borrow pits. In these areas the soil and geologic material have been removed for use as fill material or as road base. The soils in these areas are highly variable, and a typical profile is not given.

Minor Components

- Areas of somewhat poorly drained or poorly drained soils in slight depressions and at the head of drainageways
- Areas that contain asphalt, wood, glass, and other household waste materials

Land Use and Management

Most areas have been abandoned and are sparsely covered with woody shrubs and grasses. Onsite investigation is required to determine the suitability or potential of the map unit for any use and the degree of reclamation needed.

Interpretive Groups

Land capability classification: None assigned
Woodland ordination symbol: None assigned

Ur—Udorthents, loamy

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits and shoulders
Slope: 0 to 10 percent
Slope topography: Smooth and convex
Size of areas: 5 to 25 acres

Typical Profile

This map unit consists mainly of areas of sanitary landfills that have been excavated and backfilled with alternating layers of refuse and mixed soil material. The thickness of the refuse varies but generally ranges from 2 to 4 feet. The refuse is covered daily with at least 6 inches of soil material, generally clay, clay loam, or sandy loam. Also included in this unit are recreational areas, such as baseball fields, where fill material has been placed on the original soil surface. The soils in this map unit are highly variable, and a typical profile is not given.

Land Use and Management

Most areas have been planted to grasses. Onsite investigation is required to determine the suitability or potential of the map unit for any use and the degree of reclamation needed.

Interpretive Groups

Land capability classification: None assigned
Woodland ordination symbol: None assigned

WeC—Wedowee sandy loam, 6 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Shoulders
Slope: Sloping
Slope topography: Smooth and convex
Size of areas: 5 to 50 acres

Typical Profile

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—brownish yellow sandy clay loam
11 to 22 inches—strong brown sandy clay
22 to 28 inches—yellowish brown sandy clay that has common yellowish red and common reddish yellow mottles
28 to 37 inches—strong brown sandy clay loam that has common red and common pink mottles

Substratum:
37 to 50 inches—reddish yellow saprolite that crushes to loam and has many yellowish red and many pink mottles
50 to 60 inches—reddish yellow saprolite that crushes to loam and has many yellowish red and many pink mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low to moderate
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from acid crystalline rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Madison, Pacolet, Rion, Wake, and Wateree soils
- Soils that have slopes of less than 6 percent
- Soils that have more than 15 percent quartz gravel in the surface layer
- Soils that have bedrock within a depth of 60 inches
- Soils that have iron depletions with chroma of 2 or less at depths of 30 to 60 inches
- Soils that have an eroded surface layer

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Moderately suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Moderately suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

WeE—Wedowee sandy loam, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 65 acres

Typical Profile

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—brownish yellow sandy clay loam
11 to 22 inches—strong brown sandy clay
22 to 28 inches—yellowish brown sandy clay that has common yellowish red and common reddish yellow mottles
28 to 37 inches—strong brown sandy clay loam that has common red and common pink mottles

Substratum:
37 to 50 inches—reddish yellow saprolite that crushes to loam and has many yellowish red and many pink mottles
50 to 60 inches—reddish yellow saprolite that crushes to loam and has many yellowish red and many pink mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Very rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low to moderate
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Residuum weathered from acid crystalline rocks

Minor Components

- Areas of Appling, Ashlar, Cecil, Helena, Madison, Pacolet, Rion, Wake, and Wateree soils
- Soils that have more than 15 percent quartz gravel in the surface layer
- Soils that have an eroded surface layer
- Soils that have bedrock within a depth of 60 inches
- Soils that have iron depletions with chroma of 2 or less at depths of 30 to 60 inches
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Equipment use and erodibility
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope and low strength
Management measures and considerations:
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

Wf—Wehadkee loam, ponded

Setting

Landscape: Piedmont
Landform: Flood plains
Landform features: Areas ponded by beaver activity (fig. 4) and roads
Slope: 0 to 2 percent
Slope topography: Smooth to concave
Size of areas: 5 to 75 acres

Typical Profile

Surface layer:
0 to 6 inches—dark brown loam

Subsoil:
6 to 18 inches—gray loam
18 to 30 inches—grayish brown clay loam

Substratum:
30 to 65 inches—gray sandy loam that has stratification of loam and clay loam

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Poorly drained
Permeability: Moderate
High water table: Above a depth of 3.0 feet
Frequency of flooding: Frequent
Surface runoff: Ponded
Extent of erosion: Slight
Hazard of water erosion: Slight
Organic matter content: Moderate or high
Available water capacity: Moderate or high
Shrink-swell potential: Low
Parent material: Loamy alluvial sediments

Minor Components

- Areas of Cartecay, Chewacla, Fork, Roanoke, Shellbluff, and Toccoa soils
- Soils that are coarser or finer textured than the Wehadkee soil
- Soils that are not subject to ponding

Land Use and Management

Dominant Uses: Wildlife habitat
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Ponding, flooding, and wetness

Figure 4.—Ponding caused by beaver activity in an area of Wehadkee loam, ponded. The forested uplands in the background are in an area of Pacolet sandy loam, 10 to 25 percent slopes.

Pasture and hayland

Suitability: Unsuited
Management concerns: Ponding, flooding, and wetness

Woodland

Productivity class: Unsuited for loblolly pine; moderately high for willow oak
Management concerns: Equipment use, seedling mortality, and windthrow hazard
Management measures and considerations:
- Restricting the use of wheeled or tracked equipment to periods when the soil is not wet or flooded helps to prevent rutting, erosion, and sedimentation.
- Site preparation, including chopping, applying herbicides, harrowing, and bedding, helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.
- Maintaining drainageways and planting trees that are tolerant of wetness help to increase seedling survival rates.
- Periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Ponding, flooding, and wetness
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Ponding, flooding, and wetness

Local roads and streets
Suitability: Unsuited
Management concerns: Ponding, flooding, and wetness

Interpretive Groups

Land capability classification: VIIw
Woodland ordination symbol: 8W, based on willow oak as the indicator species

WhB—Wickham sandy loam, 2 to 6 percent slopes

Setting

Landscape: Piedmont
Landform: High stream terraces
Slope: Gently sloping
Slope topography: Smooth and convex
Size of areas: 5 to 40 acres

Typical Profile

Surface layer:
0 to 6 inches—brown sandy loam

Subsoil:
6 to 14 inches—strong brown sandy clay loam
14 to 19 inches—yellowish red sandy clay loam that has common red mottles
19 to 34 inches—yellowish red clay loam that has common reddish yellow mottles
34 to 50 inches—yellowish red sandy clay loam that has common reddish yellow mottles

Substratum:
50 to 60 inches—brownish yellow sandy clay loam that has many yellowish brown and many pale brown mottles

Soil Properties and Qualities

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Surface runoff: Medium
Extent of erosion: Slight
Hazard of water erosion: Moderate
Organic matter content: Low or moderately low
Available water capacity: Moderate or high

Shrink-swell potential: Low
Parent material: Loamy fluvial sediments

Minor Components

- Areas of Altavista, Roanoke, Shellbluff, and Toccoa soils
- Areas of soils that have bedrock within a depth of 60 inches
- Soils that are moderately well drained
- Soils that are subject to rare flooding

Land Use and Management

Dominant Uses: Pasture and hayland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.

Pasture and hayland
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting the management of pasture and hayland.

Woodland
Productivity class: Moderately high for loblolly pine (fig. 5)
Management concerns: Competition from undesirable plants
Management measures and considerations:
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Moderately suited
Management concerns: Moderate permeability in the subsoil
Management measures and considerations:
- Installing septic tank distribution lines during periods when the soil is not wet helps to prevent smearing and sealing of trench walls.
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Well suited
Management concerns:
- There are no significant limitations affecting dwellings.

Local roads and streets
Suitability: Well suited

Figure 5.—Pine trees in an area of Wickham sandy loam, 2 to 6 percent slopes.

Management concerns:
- There are no significant limitations affecting local roads and streets.

Management measures and considerations:
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

WkF—Wilkes gravelly loam, 10 to 40 percent slopes, very stony

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping to steep
Slope topography: Complex
Size of areas: 5 to 75 acres

Typical Profile

Surface layer:
0 to 2 inches—dark grayish brown gravelly loam

Subsurface layer:
2 to 7 inches—dark brown gravelly loam

Subsoil:
7 to 13 inches—yellowish brown gravelly clay loam

Substratum:
13 to 17 inches—yellowish brown very gravelly loam
17 inches—weathered, fractured mafic rock

Soil Properties and Qualities

Depth class: Shallow to bedrock
Drainage class: Well drained
Permeability: Moderately slow
Surface runoff: Very rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Very low or low
Shrink-swell potential: Moderate
Depth to soft bedrock: 10 to 20 inches
Depth to hard bedrock: 40 to more than 60 inches
Parent material: Residuum weathered from intermediate and mafic crystalline rocks

Minor Components

- Areas of Badin, Enon, Georgeville, Mecklenburg, and Zion soils
- Soils that are very strongly acid throughout
- Soils that have more than 35 percent rock fragments in the control section
- Soils that have bedrock within a depth of 40 inches
- Areas that are nonstony
- Areas where 3 to 10 percent of the surface area is covered with stones, boulders, or rock outcrops
- Soils that have an eroded surface layer
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes greater than 40 percent

Land Use and Management

Dominant Uses: Woodland (fig. 6)
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope and stones on the surface

Pasture and hayland
Suitability: Unsuited
Management concerns: Slope and stones on the surface

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, windthrow hazard, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.

Figure 6.—Woodland in an area of Wilkes gravelly loam, 10 to 40 percent slopes, very stony.

- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Depth to bedrock and slope
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Unsuited
Management concerns: Depth to bedrock and slope

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIIs
Woodland ordination symbol: 7R, based on loblolly pine as the indicator species

ZnC—Zion silt loam, 2 to 10 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Summits and shoulders
Slope: Gently sloping or sloping
Slope topography: Smooth and convex
Size of areas: 5 to 125 acres

Typical Profile

Surface layer:
0 to 3 inches—grayish brown silt loam

Subsurface layer:
3 to 10 inches—light yellowish brown fine sandy loam

Subsoil:
10 to 22 inches—yellowish red clay

Substratum:
22 to 24 inches—brown saprolite that crushes to loam and has many reddish yellow mottles
24 to 35 inches—multicolored, weathered mafic metamorphic rock
35 inches—unweathered mafic metamorphic rock

Soil Properties and Qualities

Depth class: Moderately deep to bedrock
Drainage class: Well drained
Permeability: Slow or moderately slow
Surface runoff: Medium or rapid
Extent of erosion: Slight
Hazard of water erosion: High
Organic matter content: Low or moderately low
Available water capacity: Very low or low
Shrink-swell potential: High
Depth to hard bedrock: 20 to 40 inches
Parent material: Residuum weathered from mafic crystalline rocks

Minor Components

- Small areas of Badin, Enon, Georgeville, Helena, Herndon, Mecklenburg, and Wilkes soils
- Soils that have bedrock within a depth of 20 inches
- Areas of mafic rock outcrops
- Soils that have an eroded surface layer
- Soils that have a surface layer of sandy loam

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility, equipment use, and depth to bedrock
Management measures and considerations:
- Resource management systems that include terraces and diversions, stripcropping, contour tillage, no-till farming, and crop residue management help to reduce the hazard of erosion, control surface runoff, and maximize rainfall infiltration.
- Restricting fieldwork to periods when the soil is not wet helps to prevent rutting and soil compaction.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and growing shallow-rooted crops helps to overcome the rooting depth limitation.

Pasture and hayland
Suitability: Moderately suited
Management concerns: Depth to bedrock
Management measures and considerations:
- Shallow-rooted grasses and legumes that are adapted to droughty conditions resulting from the depth to bedrock should be selected for planting.

Woodland
Suitability: Moderately suited
Productivity class: Moderately high for loblolly pine
Management concerns: Windthrow hazard, competition from undesirable plants, and equipment use
Management measures and considerations:
- Periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Depth to bedrock and slow permeability in the subsoil

Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Removing as much of the clay as possible and increasing the thickness of the base aggregate help to improve soil performance.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 6D, based on loblolly pine as the indicator species

ZnE—Zion silt loam, 10 to 25 percent slopes

Setting

Landscape: Piedmont
Landform: Hills
Landform position: Backslopes, footslopes, and toeslopes
Slope: Strongly sloping or moderately steep
Slope topography: Complex
Size of areas: 5 to 90 acres

Typical Profile

Surface layer:
0 to 3 inches—grayish brown silt loam

Subsurface layer:
3 to 10 inches—light yellowish brown fine sandy loam

Subsoil:
10 to 22 inches—yellowish red clay

Substratum:
22 to 24 inches—brown saprolite that crushes to loam and has many reddish yellow mottles
24 to 35 inches—multicolored, weathered mafic metamorphic rock
35 inches—unweathered mafic metamorphic rock

Soil Properties and Qualities

Depth class: Moderately deep to bedrock
Drainage class: Well drained

Permeability: Slow or moderately slow
Surface runoff: Very rapid
Extent of erosion: Slight
Hazard of water erosion: Very high
Organic matter content: Low or moderately low
Available water capacity: Very low or low
Shrink-swell potential: High
Depth to hard bedrock: 20 to 40 inches
Parent material: Residuum weathered from mafic crystalline rocks

Minor Components

- Small areas of Badin, Enon, Georgeville, Helena, Herndon, Mecklenburg, and Wilkes soils
- Soils that have bedrock within a depth of 20 inches
- Areas of mafic rock outcrops
- Soils that have an eroded surface layer
- Soils that have a surface layer of sandy loam
- Soils that formed in alluvial sediments along drainageways
- Soils that have slopes of more than 25 percent

Land Use and Management

Dominant Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Slope

Pasture and hayland
Suitability: Moderately suited
Management concerns: Equipment use, erodibility, and depth to bedrock
Management measures and considerations:
- The use of equipment should be restricted to the less sloping areas.
- A rotational grazing system and a well-planned clipping and harvesting schedule help to maintain pastures, minimize erosion, and increase productivity.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Shallow-rooted grasses and legumes that are adapted to droughty conditions resulting from the depth to bedrock should be selected for planting.

Woodland
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, windthrow hazard, and competition from undesirable plants
Management measures and considerations:
- Constructing haul roads and skid trails on the contour, at grades of less than 5 percent, helps to overcome equipment limitations and reduce the hazard of erosion.
- Unsurfaced roads may be impassable during wet periods because of the high content of clay; incorporating gravel into the roadbed, however, helps to increase road stability.
- Periodically harvesting windthrown trees that result from high winds and a limited rooting depth helps to maintain site productivity.
- Site preparation practices, such as chopping, prescribed burning, and applications of herbicide, help to reduce competition from unwanted plants.

- Establishing permanent plant cover on roads and landings after logging operations helps to minimize erosion and sedimentation.
- The local unit of the Georgia Forestry Commission can be contacted for further information on the best management practices for forestry.

Urban Development

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Depth to bedrock, slow permeability in the subsoil, and slope
Management measures and considerations:
- The local Health Department should be contacted for guidance in developing sanitary facilities.

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential, slope, and depth to bedrock
Management measures and considerations:
- Reinforcing foundations or backfilling with coarse material helps to prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope or building in the less sloping areas helps to improve soil performance.
- Excavation and removal of hard bedrock or the use of special earthmoving equipment is needed for foundation construction.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential, low strength, and slope
Management measures and considerations:
- Removing as much of the clay as possible and increasing the thickness of the base aggregate help to improve soil performance.
- Providing sand and gravel and compacting roadbeds improve soil strength.
- Designing roads so that they conform to the natural slope and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Establishing permanent plant cover in disturbed areas after construction activities helps to minimize erosion and sedimentation.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 6R, based on loblolly pine as the indicator species

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Generally, the soils in Lincoln and Wilkes Counties that are well suited to crops are also well suited to urban uses. The data concerning specific soils in the county can be used in planning future land use patterns. The potential for farming should be considered relative to any soil limitations and the potential for nonfarm development.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

James E. Dean, conservation agronomist, Holli Kuykendall, grassland water quality specialist, and Joseph M. Riley, district conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; the estimated yields of the main crops and hay and pasture plants are listed for each soil; and prime farmland is described. This section is useful to land users, equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units” and in the tables. Specific information can be obtained from the local

office of the Natural Resources Conservation Service of the Cooperative Extension Service.

Federal and State regulations require that any area designated as wetlands cannot be altered without prior approval. Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

In the survey area, soil erosion is a hazard on soils that have slopes of more than 3 percent. Loss of the surface layer through erosion is damaging. Soil productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a shallow surface layer or a clayey subsoil, or both, and on soils that have a layer in or below the subsoil that limits the depth of the root zone. Appling, Cecil, Madison, and Pacolet soils are examples of soils that have a clayey subsoil. Ashlar soils are an example of soils having bedrock that limits rooting depth. Erosion on farmland results in the sedimentation of streams. Controlling erosion minimizes the pollution of water by runoff carrying plant nutrients, soil particles, and plant residue. It improves the quality of water for municipal use, for recreation, and for fish and wildlife.

Preparing a good seedbed is difficult in many sloping fields on clayey spots because much or all of the original friable surface soil has been lost through erosion. These eroded spots are common in areas of the eroded Appling and Cecil soils.

Erosion-control practices provide a protective surface cover, reduce runoff, and increase the rate of water infiltration. A cropping system that keeps a vegetative cover on the soil for extended periods helps to minimize soil loss and maintain the productive capacity of the soil. On livestock farms, including forage crops of legumes and grasses in the cropping system and in areas of permanent pasture and hayland helps to control erosion in sloping areas. The forage crops also add nitrogen to the soil and improve tilth.

In most areas of Appling, Cecil, Madison, and Pacolet soils that occur on hillsides and have slopes of more than 6 percent, contour farming and terracing are not practical because the slopes are too short and irregular. In these areas, cropping systems that provide a substantial cover of plant residue are needed to control erosion. Residue management, conservation tillage, cover crops, stripcropping, and the inclusion of grasses and legumes in the rotation system provide ground cover on the soil surface and help to increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most of the soils in the survey area.

Terraces and diversions shorten the length of slopes and thus minimize erosion caused by runoff. They are most effective in areas of deep, well drained, gently sloping soils on ridgetops that are smooth and convex. Appling, Cecil, Madison, and Pacolet soils are examples.

Most soils used for cropland are subject to erosion if they are plowed in fall and left bare until spring. Winter cover crops should be planted where cropland is plowed in fall.

Bottomland soils in the survey area include Cartecay, Chewacla, Roanoke, Shellbluff, and Toccoa soils. The production of crops and pasture on these soils is not generally possible unless drainage practices are used. Existing drainage systems need to be continually maintained on these soils. Bottomland soils are also subject to flooding.

Information about erosion-control and drainage practices for each kind of soil is available at the local office of the Natural Resources Conservation Service. Drainage is a major consideration in managing crops and pasture.

Managing drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Most of the soils in the survey area are naturally acid. Soils on flood plains, such as Cartecay, Chewacla, Roanoke, Shellbluff, and Toccoa soils, range from slightly acid to strongly acid. Many soils in the uplands are strongly acid or very strongly acid in their natural state. Because available phosphorus and potash levels are naturally low in most of these soils, applying ground limestone to raise the pH level improves the growth of legumes and other crops.

Most of the upland soils are naturally low in fertility. On all of the soils, the amount of lime, fertilizer, and organic wastes to be applied should be based on the results of a soil test, realistic crop yields, waste analysis, and a nutrient management plan. The Cooperative Extension Service and the Natural Resources Conservation Service can provide information concerning nutrient management plans.

Organic matter is an important factor in the germination of seeds, root growth, the infiltration of water into the soil, and soil erosion. Soils that have good tilth are granular and porous. Most of the soils used for crops in the survey area have a surface layer of loamy sand that has a low content of organic matter. Generally, the structure of these soils is poor and intense rainfall causes the formation of a crust on the soil surface. This crust is hard when dry. It reduces infiltration and plant growth and increases runoff. Residue management, stripcropping, the inclusion of grasses and legumes in the rotation system, and regular additions of manure and other organic material in combination with conservation tillage help to improve soil structure and prevent the formation of a crust.

Crops commonly grown in the survey area are corn, soybeans, grain sorghum, wheat, and vegetables. Some field crops, such as cotton, are suited to the soils and climate of the survey area but are not commonly grown.

Specialty crops include sweet corn, field peas, watermelons, cantaloupes, and other small fruits, vegetables, and nursery plants. Watermelons make up the largest acreage of specialty crops grown in the survey area.

Deep soils that are characterized by good natural drainage and that warm up early in spring are especially well suited to many vegetables and small fruits. These soils include Appling, Cecil, Madison, and Pacolet soils that have slopes of less than 6 percent.

Most of the well drained soils in the survey area are suitable for orchards and nursery plants. Soils in low landscape positions, where frost is frequent and air drainage is poor, generally are poorly suited to early vegetables, small fruits, orchard crops, and nursery plants.

If adequately managed and protected from flooding, many of the soils on flood plains are suited to a wide range of vegetable crops.

Technical assistance and the latest information about specialty crops can be obtained from the local office of the Cooperative Extension Service or the Natural Resources Conservation Service.

Pastures and hayland typically consist of mixtures of endophyte-infected tall fescue and common bermudagrass. This plant combination is well suited to the survey area because it provides forage for cool- and warm-season grazing. In areas managed by deferred grazing practices, native warm-season perennial grasses, such as eastern gamagrass, switchgrass, and indiangrass, can provide high-quality, palatable forage. Alfalfa can be grown as a specialty forage crop.

Irrigation is used in the production of orchard and specialty crops. The major source of water for irrigation is surface water from streams and ponds.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other

climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The application rate of nitrogen for corn on soils that have a yield potential of 125 to 150 bushels per acre should be 140 to 160 pounds per acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by the crop is an unnecessary expense and causes a hazard of water pollution. If corn or cotton is grown after the harvest of soybeans or peanuts, nitrogen rates can be reduced by about 20 to 30 pounds per acre. Because nitrogen can be readily leached from sandy soils, applications may be needed on these soils more than once during the growing season. Some general fertilizer recommendations are available in the circular “Fertilizer Recommendations for Field Crops” *(3)*.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the section “Detailed Soil Map Units” and in the yields table.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 129,325 acres in the survey area, or nearly 28 percent of the total acreage, meets the soil requirements for prime farmland. Scattered areas of this land are throughout Lincoln and Wilkes Counties, mainly in general soil map units 2, 3, and 6, which are described under the heading “General Soil Map Units.”

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 6. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

Woodland Management and Productivity

Gary L. Tyre, forester, Natural Resources Conservation Service, helped prepare this section.

The most significant forest types in Lincoln and Wilkes Counties include loblolly-shortleaf pine, oak-pine, and oak-hickory. Oak-gum-cypress and elm-ash-cottonwood types occur to a small extent in Wilkes County. These forest types were dominant in the virgin forests which once made up a majority of the land in Wilkes County.

Forest land makes up 105,268 acres, or 84 percent, of Lincoln County and 229,062 acres, or 76 percent, of Wilkes County *(6)*.

Most of the forest land in the survey area is privately owned. More than 80 percent of both counties is privately owned. The majority of the private land (about 60 percent in Lincoln County and 94 percent in Wilkes County) belongs to farmers and other individuals. The forest industry owns 20 percent of Lincoln County and 25 percent of Wilkes County. About 20 percent of Lincoln County is Federal land.

Forest land in the survey area is relatively productive. In both counties, about 40 percent of the commercial forest land is capable of producing more than a cord per acre per year. Stocking rates generally reflect productive capacity. More than 40 percent of the acreage of forest land in both counties is stocked at rates of 100 percent or better.

Forests grow on a wide variety of soils in the survey area. Soils on flood plains, including Toccoa, Cartecay, Chewacla, and Shellbluff soils, are highly productive and have a site index of almost 90 or greater. These soils are wet. Most of these soils have only slight or moderate management concerns. The characteristic species are blackgum, sweetgum, water oak, yellow-poplar, and loblolly pine.

Upland soils occurring extensively in the survey area include Cecil, Pacolet, Madison, Wedowee, Appling, Helena, Rion, Ashlar, Mecklenburg, Zion, Enon, Georgeville, Herndon, and Badin soils. These soils are productive or moderately productive and have site indices ranging from about 80 to 90. Forests are easily managed on these soils.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section “Detailed Soil Map Units,” the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in management.

Table 7 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare per year. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of the slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a high content of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, the use of wheeled equipment becomes more difficult. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of the naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a high water table and the length of the period when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, by a fragipan, by bedrock, or by a combination of such factors as soil wetness, texture, structure, and depth. The risk is *slight* if strong winds break trees but do not uproot them; *moderate* if strong winds blow a few trees over and break many trees; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail system may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers should plan site preparation measures to ensure timely reforestation.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and a *productivity class*. The predominant common trees are listed in table 7 in the order of their observed occurrence. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years (50 years in this survey). This index applies to fully stocked, even-aged, unmanaged stands. Productivity of a site can be improved through management practices, such as bedding, ditching, managing water, applying fertilizer, and planting genetically improved species.

The *productivity class* represents the yield likely to be produced by the most important trees, expressed in cubic meters per hectare per year.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

The soils of the survey area are rated in table 8 according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are

limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the period of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The ratings in table 9 are intended to be used as a guide and are not site specific. Onsite investigation is needed for individual management plans.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be

established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and rye.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are orchardgrass, switchgrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, ragweed, and switchgrass.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, black cherry, sweetgum, crabapple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are dogwood, oaks, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cypress, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants, or both, and associated grasses, legumes, and wild herbaceous plants.

Wildlife attracted to these areas include wild turkey, several songbirds, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, white-tailed deer, and black bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm, dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the high water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established. Soil tests are essential to determine liming and fertilizer needs. Help in making soil tests or in deciding what soil additive, if any, should be used can be obtained from the office of the county’s Soil and Water Conservation District or the local office of the Cooperative Extension Service.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil

properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. The animal waste lagoons commonly used in farming operations are not considered in the ratings. They are generally deeper than the lagoons referred to in the table and rely on anaerobic bacteria to decompose waste materials.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope or bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel, or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the high water table is more than 3 feet. Soils rated *fair* have more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the high water table is 1 to 3 feet. Soils

rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a high water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale, siltstone, and weathered granite saprolite, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a high water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a high water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area. Ponds that are less than about 2 acres in size are not shown on the maps because of the scale of mapping.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, mica, or salts or sodium. Depth to a high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, susceptibility to flooding, subsidence of organic layers, and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Drainage may be a major management consideration in some areas. Management of drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to a high water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the availability of suitable irrigation water, the depth of the root zone, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A

hazard of soil blowing, a low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading “Classification of the Soils.”

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages, by weight, of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, by volume, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil

that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest.

Rock fragments 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time. It is the difference between the amount of soil water at field moisture capacity and the amount at wilting point.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, more than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. The soils assigned to group 1 are the most susceptible to soil blowing, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep or very deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to very deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather

conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in table 16 are the depth to the high water table; the kind of water table—that is, *perched* or *apparent*; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the high water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (10, 8). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 17 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, kaolinitic, thermic Typic Hapludults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in

the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” (9). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (8) and in “Keys to Soil Taxonomy” (10). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Altavista Series

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loamy fluvial sediments
Landform: Low stream terraces
Slope range: 0 to 2 percent
Classification: Fine-loamy, mixed, semiactive, thermic Aquic Hapludults

Geographically Associated Soils

- Cartecay soils, which do not have an argillic horizon, have a coarse-loamy particle-size control section, are somewhat poorly drained, and are on flood plains
- Chewacla soils, which do not have an argillic horizon, are somewhat poorly drained, and are on flood plains
- Fork soils, which have base saturation greater than 35 percent and are somewhat poorly drained
- Roanoke soils, which have a clayey particle-size control section and are poorly drained
- Shellbluff soils, which do not have an argillic horizon, have a fine-silty particle-size control section, and are on flood plains
- Toccoa soils, which do not have an argillic horizon, have a coarse-loamy particle-size control section, and are on flood plains
- Wickham soils, which have hue of 7.5YR or redder, are well drained, and are not subject to flooding

Typical Pedon

Altavista sandy loam, 0 to 2 percent slopes, rarely flooded; in Wilkes County, 1,200 feet west (260 degrees) of Long Creek Bridge on Pete Johnson Road; USGS topographic quadrangle, Jacksons Crossroads, GA (1970); lat. 33 degrees 56 minutes 35 seconds N. and long. 82 degrees 48 minutes 30 seconds W.

Oi—1 inch to 0; slightly decomposed hardwood leaves and twigs; abrupt smooth boundary.

A—0 to 5 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; strongly acid; clear smooth boundary.

E—5 to 10 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; common fine and medium and few coarse roots; strongly acid; clear smooth boundary.

Bt1—10 to 14 inches; light yellowish brown (10YR 6/4) clay loam; weak medium subangular blocky structure; friable; few medium roots; few prominent clay films on faces of peds; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt2—14 to 19 inches; yellowish brown (10YR 5/6) clay loam; common medium very pale brown (10YR 7/3) mottles; weak medium subangular blocky structure; friable; few medium roots; common prominent clay films on faces of peds; few fine flakes of mica; strongly acid; gradual smooth boundary.

Bt3—19 to 30 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; few medium roots; common prominent clay films on faces of peds; few fine flakes of mica; common medium light brownish gray (10YR 6/2) and common medium pale brown (10YR 6/3) iron depletions; strongly acid; gradual smooth boundary.

Bt4—30 to 39 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; few medium roots; common prominent clay films on faces of peds; few fine flakes of mica; many medium light brownish gray (10YR 6/2) iron depletions; moderately acid; clear smooth boundary.

C—39 to 55 inches; brownish yellow (10YR 6/8) sandy loam; massive; very friable; few fine flakes of mica; many medium light gray (10YR 7/2) iron depletions; moderately acid; gradual smooth boundary.

Cg—55 to 60 inches; light gray (10YR 7/2) loamy sand; massive; loose; few fine flakes of mica; many medium brownish yellow (10YR 6/8) iron accumulations; moderately acid.

Range in Characteristics

Thickness of the solum: 33 to more than 60 inches

Depth to bedrock: More than 60 inches

Content of flakes of mica: None to common in the A and E horizons; few or common in the B and C horizons

Content of rock fragments: 0 to 5 percent in the A and B horizons; 0 to 20 percent in the C horizon

Depth to iron depletions with chroma of 2 or less: Within 24 inches of the upper boundary of the Bt horizon

Reaction: Extremely acid to moderately acid throughout the profile in unlimed areas

A or Ap horizon:

Thickness—5 to 11 inches

Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 4

Texture—loamy sand, sandy loam, fine sandy loam, or loam

E horizon (if it occurs):

Color—hue of 10YR, value of 5 or 6, and chroma of 4 to 6

Texture—loamy sand, sandy loam, fine sandy loam, or loam

BE horizon (if it occurs):

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 3 to 6

Texture—sandy loam, loam, or sandy clay loam

Bt horizon:

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 3 to 8

Mottles—none to many in shades of red, brown, or yellow in the upper part of the horizon

Iron accumulations or depletions—few to many in shades of red, brown, or yellow; few to many in shades of gray in the lower part of the horizon

Texture—sandy clay loam or clay loam

BC horizon (if it occurs):

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 3 to 8

Iron accumulations or depletions—few to many in shades of red, brown, yellow, or gray

Texture—loamy sand, sandy loam, loam, or sandy clay loam

C horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 8

Iron accumulations or depletions—few to many in shades of red, brown, yellow, or gray
Texture—loamy sand, sandy loam, or loam

Cg horizon (if it occurs):
Color—hue of 10YR, value of 5 to 7, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—loamy sand, sandy loam, or loam

Appling Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic igneous and high-grade metamorphic rocks
Landform: Hills
Slope range: 2 to 10 percent
Classification: Fine, kaolinitic, thermic Typic Kanhapludults

Geographically Associated Soils

- Cecil and Pacolet soils, which have a redder subsoil than the Appling soils and do not have an evident pattern of mottling in the upper part of the subsoil
- Helena soils, which are moderately well drained
- Madison soils, which have a redder subsoil and contain more mica than the Appling soils
- Rion soils, which have a fine-loamy particle-size control section
- Wedowee soils, which have a solum that is 20 to 40 inches thick

Typical Pedon

Appling sandy loam, 2 to 6 percent slopes; in Wilkes County, 0.2 mile south of Centerville on a paved county road, 1,400 feet east of the road; USGS topographic quadrangle, Rayle, GA (1971); lat. 33 degrees 47 minutes 50 seconds N. and long. 82 degrees 55 minutes 10 seconds W.

Ap—0 to 9 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; common fine roots; few fine flakes of mica; moderately acid; clear smooth boundary.
BE—9 to 15 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few fine flakes of mica; strongly acid; gradual smooth boundary.
Bt1—15 to 26 inches; brownish yellow (10YR 6/6) sandy clay; common medium yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual smooth boundary.
Bt2—26 to 33 inches; brownish yellow (10YR 6/6) sandy clay; many medium yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual smooth boundary.
BC—33 to 41 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium yellowish red (5YR 5/6) and common medium very pale brown (10YR 7/4) mottles; weak medium subangular blocky structure; friable; few distinct clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual smooth boundary.
C—41 to 60 inches; brownish yellow (10YR 6/6) saprolite that crushes to sandy clay

loam; many medium very pale brown (10YR 7/4) mottles; massive; friable; few fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Depth to hard bedrock: More than 60 inches
Content of flakes of mica: Few or common in the A, E, and Bt horizons; few to many in the BC and C horizons
Content of rock fragments: 0 to 15 percent in the A and E horizons; 0 to 10 percent in the B and C horizons
Reaction: Very strongly acid or strongly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—5 to 11 inches
Color—hue of 10YR, value of 3 to 6, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR and value and chroma of 4 to 6
Texture—loamy coarse sand or sandy loam

BA or BE horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6
Texture—sandy loam or sandy clay loam

Bt horizon:
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 4 to 8; evident patterns of mottling where hue is 5YR
Mottles—few to many in shades of red, brown, or yellow
Texture—clay loam, sandy clay, or clay

BC horizon (if it occurs):
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 4 to 8; evident patterns of mottling where hue is 5YR
Mottles—few to many in shades of red, brown, or yellow
Texture—sandy clay loam, clay loam, or sandy clay

C horizon:
Color—horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 6, and chroma of 4 to 8 or is multicolored in shades of red, brown, and yellow
Texture—loamy saprolite

Ashlar Series

Depth class: Moderately deep to hard bedrock
Drainage class: Excessively drained
Permeability: Moderately rapid
Parent material: Residuum weathered from granite and gneiss
Landform: Hills
Slope range: 10 to 25 percent
Classification: Coarse-loamy, mixed, semiactive, thermic Typic Dystrochrepts

Geographically Associated Soils

- Pacolet, Rion, and Wedowee soils, which have an argillic horizon and have bedrock at a depth of more than 60 inches
- Wake soils, which have hard bedrock within a depth of 20 inches

• Wateree soils, which have soft bedrock at a depth of 20 to 40 inches

Typical Pedon

Ashlar fine gravelly loamy coarse sand in an area of Rion-Ashlar-Wake complex, 10 to 25 percent slopes (fig. 7); in Wilkes County, 1.4 miles southeast of Linesville, 900 feet southwest on a woodland road, 150 feet northwest of the road; USGS topographic quadrangle, Celeste, GA (1972); lat. 33 degrees 49 minutes 52 seconds N. and long. 82 degrees 50 minutes 55 seconds W.

A—0 to 8 inches; dark grayish brown (10YR 4/2) fine gravelly loamy coarse sand; weak fine granular structure; very friable; common very fine and fine roots; few fine flakes of mica; 20 percent fine pebbles; very strongly acid; abrupt smooth boundary.

E—8 to 13 inches; brown (10YR 5/3) fine gravelly loamy coarse sand; weak fine granular structure; very friable; common fine and medium roots; few fine flakes of mica; 20 percent fine pebbles; very strongly acid; gradual wavy boundary.

Bw—13 to 27 inches; brownish yellow (10YR 6/6) fine gravelly coarse sandy loam; weak fine granular structure; very friable; few fine and medium roots; few fine flakes of mica; 20 percent fine pebbles; very strongly acid; abrupt smooth boundary.

R—27 inches; unweathered, multicolored porphyritic granite bedrock.

Figure 7.—Typical profile of Ashlar fine gravelly loamy coarse sand in an area of Rion-Ashlar-Wake complex, 10 to 25 percent slopes.

Range in Characteristics

Thickness of the solum: 10 to 38 inches
Depth to hard bedrock: 20 to 40 inches
Content of flakes of mica: Few or common throughout the profile
Content of rock fragments: 0 to 35 percent throughout the profile
Reaction: Very strongly acid to moderately acid in the A and E horizons in unlimed areas; extremely acid to strongly acid in the B and C horizons

A or Ap horizon:
Thickness—3 to 8 inches
Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4
Texture—loamy coarse sand, coarse sandy loam, sandy loam, or fine sandy loam in the fine-earth fraction

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8
Texture—coarse sandy loam, sandy loam, or fine sandy loam in the fine-earth fraction

C horizon (if it occurs):
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 8, and chroma of 1 to 8
Texture—saprolite that crushes to coarse sandy loam, sandy loam, or fine sandy loam in the fine-earth fraction

Cr horizon (if it occurs):
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 1 to 8
Texture—weathered bedrock that crushes to sandy loam or fine sandy loam

R layer:
Color—multicolored
Texture—unweathered granite or gneiss bedrock

Badin Series

Depth class: Moderately deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from slates and other fine grained metamorphic rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine, mixed, semiactive, thermic Typic Hapludults

Geographically Associated Soils

- Georgeville and Herndon soils, which have bedrock at a depth of more than 60 inches
- Pageland soils, which are moderately well drained
- Wilkes and Zion soils, which have base saturation greater than 35 percent and formed in residuum weathered from mafic rocks

Typical Pedon

Badin silt loam, 10 to 25 percent slopes; in Lincoln County, 1,500 feet north-northeast of the Highway 47 bridge over the Little River; USGS topographic quadrangle, Leah,

GA (1971); lat. 33 degrees 42 minutes 27 seconds N. and long. 82 degrees 20 minutes 40 seconds W.

A—0 to 4 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; common very fine, fine, and medium roots; 5 percent slate channers; strongly acid; clear smooth boundary.

Bt1—4 to 14 inches; reddish yellow (7.5YR 6/6) channery clay loam; weak medium subangular blocky structure; friable; common medium roots; few faint clay films on faces of peds; 20 percent slate channers; strongly acid; gradual smooth boundary.

Bt2—14 to 23 inches; reddish yellow (7.5YR 6/6) channery silty clay loam; few fine yellowish red (5YR 5/6) and few fine brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable; few medium roots; common distinct clay films on faces of peds; 15 percent slate channers; strongly acid; clear wavy boundary.

Cr—23 to 45 inches; multicolored yellowish red (5YR 5/6), reddish yellow (7.5YR 6/6), and brownish yellow (10YR 6/6) highly fractured slate that can be dug with difficulty with a spade; few seams of silty clay loam in cracks; clear wavy boundary.

R—45 inches; fractured slate bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 inches or more
Content of rock fragments: 5 to 35 percent in the solum
Reaction: Extremely acid to strongly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—2 to 8 inches
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 or 5, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 2 to 4
Texture—very fine sandy loam, loam, or silt loam

BA or BE horizon (if it occurs):
Color—hue of 5YR or 7.5YR and value and chroma of 4 to 6
Texture—loam, silt loam, or silty clay loam in the fine-earth fraction

Bt horizon:
Color—hue of 2.5YR, 5YR, or 7.5YR, value of 4 to 6, and chroma of 4 to 8
Mottles—none to common in shades of red, brown, or yellow
Texture—clay loam, silty clay loam, silty clay, or clay in the fine-earth fraction; average of more than 30 percent silt

BC horizon (if it occurs):
Color—horizon has hue of 2.5YR, 5YR, or 7.5YR, value of 4 to 6, and chroma of 4 to 8, is mottled in these colors, or is multicolored
Texture—silt loam, clay loam, or silty clay loam in the fine-earth fraction

C horizon (if it occurs):
Color—horizon has hue of 2.5YR, 5YR, or 7.5YR, value of 4 to 6, and chroma of 3 to 8 or is multicolored
Texture—saprolite that crushes to silt loam or silty clay loam

Cr horizon:
Color—multicolored
Texture—fractured, weathered slate or other fine grained metamorphic rocks

R layer (if it occurs):
Color—multicolored
Texture—unweathered slate or other fine grained metamorphic rocks

Cartecay Series

Depth class: Very deep to bedrock
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid
Parent material: Loamy alluvial sediments
Landform: Flood plains
Slope range: 0 to 2 percent
Classification: Coarse-loamy, mixed, semiactive, nonacid, thermic Aquic Udifluvents

Geographically Associated Soils

- Altavista soils, which have an argillic horizon, have a fine-loamy particle-size control section, are moderately well drained, and are on low stream terraces
- Chewacla soils, which have a fine-loamy particle-size control section
- Fork soils, which have an argillic horizon, have base saturation greater than 35 percent, have a fine-loamy particle-size control section, and are on low stream terraces
- Roanoke soils, which have an argillic horizon, have a clayey particle-size control section, and are poorly drained
- Shellbluff soils, which have a fine-silty particle-size control section and are moderately well drained
- Toccoa soils, which are moderately well drained
- Wehadkee soils, which have a fine-loamy particle-size control section and are poorly drained

Typical Pedon

Cartecay loam, frequently flooded (fig. 8); in Wilkes County, 1.2 miles northwest on Mallorysville Road from its intersection with Georgia Highway 17 in Tignall, 1 mile west along a dirt road and across a bridge over a perennial stream, 550 feet north of the road and 35 feet west of the stream; USGS topographic quadrangle, Jacksons Crossroads, GA (1970); lat. 33 degrees 52 minutes 44 seconds N. and long. 82 degrees 46 minutes 28 seconds W.

Ap—0 to 9 inches; brown (7.5YR 5/4) loam; weak fine granular structure; very friable; common very fine and fine roots; few fine flakes of mica; moderately acid; clear smooth boundary.

C1—9 to 15 inches; brown (7.5YR 5/4) loam; massive; very friable; common very fine and fine roots; thin strata of fine sandy loam; few fine flakes of mica; many fine very pale brown (10YR 7/3) iron depletions; moderately acid; gradual smooth boundary.

C2—15 to 25 inches; brown (7.5YR 5/4) loam; massive; very friable; few very fine and fine roots; thin strata of coarse sandy loam and sandy loam; few fine flakes of mica; many medium very pale brown (10YR 7/3) and many medium light brownish gray (10YR 6/2) iron depletions; strongly acid; clear smooth boundary.

Cg1—25 to 40 inches; gray (10YR 6/1) sandy loam;massive; very friable; few very fine and fine roots; thin strata of loamy sand; few fine flakes of mica; common medium strong brown (7.5YR 5/6) iron accumulations; 5 percent rock fragments; strongly acid; clear smooth boundary.

Figure 8.—Typical profile of Cartecay loam, frequently flooded, showing stratified layers deposited by flooding.

Cg2—40 to 60 inches; gray (2.5Y 5/1) sandy loam; massive; very friable; thin strata of loamy coarse sand, loamy sand, and loam; few fine flakes of mica; 5 percent rock fragments; slightly acid; gradual smooth boundary.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of flakes of mica: Few to many throughout the profile
Content of rock fragments: 0 to 10 percent in the A horizon; 0 to 15 percent in the C horizon; 2 to 50 percent in the Cg horizon
Depth to iron depletions with chroma of 2 or less: 0 to 20 inches
Reaction: Strongly acid to slightly acid throughout the profile, but moderately acid or slightly acid in some part of the 10- to 40-inch control section

A or Ap horizon:
Thickness—6 to 10 inches
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 6

C horizon:
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 8, and chroma of 3 to 6

Iron accumulations or depletions—few to many in shades of red, brown, yellow, or gray
Texture—sandy loam, fine sandy loam, loam, or silt loam that has thin strata of coarser or finer textured material

Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—sandy loam, loam, or silt loam that has thin strata of coarser or finer textured material

Cecil Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic, igneous, and high-grade metamorphic rocks
Landform: Hills
Slope range: 2 to 10 percent
Classification: Fine, kaolinitic, thermic Typic Kanhapludults

Geographically Associated Soils

- Appling and Wedowee soils, which have a yellower subsoil than the Cecil soils
- Helena soils, which have a yellower subsoil than the Cecil soils and are moderately well drained
- Lloyd soils, which have a dark red subsoil
- Madison soils, which contain more mica than the Cecil soils
- Mecklenburg soils, which have a sticky and plastic subsoil and have base saturation greater than 35 percent
- Pacolet soils, which have a solum that is 20 to 40 inches thick
- Rion soils, which have a fine-loamy particle-size control section

Typical Pedon

Cecil sandy loam, 2 to 6 percent slopes; in Wilkes County, 1.8 miles south of Sandtown on Georgia Highway 44, about 400 feet east of the road, in a cultivated field; USGS topographic quadrangle, Tignall, GA (1955); lat. 33 degrees 48 minutes 33 seconds N. and long. 82 degrees 41 minutes 24 seconds W.

Ap—0 to 8 inches; strong brown (7.5YR 5/6) sandy loam; weak fine granular structure; very friable; many very fine and few fine roots; few fine flakes of mica; moderately acid; clear smooth boundary.
BA—8 to 16 inches; yellowish red (5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; common very fine and few fine roots; few fine flakes of mica; strongly acid; gradual smooth boundary.
Bt1—16 to 26 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; few very fine and fine roots; few distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual smooth boundary.
Bt2—26 to 42 inches; red (2.5YR 4/8) sandy clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual smooth boundary.
BC—42 to 55 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine flakes of mica; very strongly acid; gradual smooth boundary.

C—55 to 60 inches; red (2.5YR 4/8) saprolite that crushes to sandy clay loam; massive; very friable; common fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches; the Bt horizon extends to a depth of 30 to 59 inches
Depth to bedrock: More than 60 inches
Content of flakes of mica: None to common in the Bt horizon; few to many in the BC and C horizons
Content of rock fragments: 0 to 35 percent in the A and E horizons; 0 to 10 percent in the B and C horizons
Reaction: Very strongly acid or strongly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—3 to 8 inches
Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 2 to 6
Texture—sandy loam or sandy clay loam

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture—sandy loam, fine sandy loam, or loam

BA or BE horizon (if it occurs):
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture—loam, sandy clay loam, or clay loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 or 8; horizon may have hue of 5YR where mottling pattern is not evident
Mottles—none or few in shades of brown or yellow in the lower part of the horizon
Texture—clay loam, sandy clay, or clay; less than 30 percent silt

BC horizon (if it occurs):
Color—hue of 10R or 2.5YR, value of 4 to 6, and chroma of 4 to 8; horizon may have hue of 5YR where mottling pattern is not evident
Mottles—none to common in shades of brown or yellow
Texture—loam, sandy clay loam, or clay loam

C horizon:
Color—horizon has hue of 10R, 2.5YR, or 5YR, value of 4 to 6, and chroma of 4 to 8 or is multicolored
Texture—loamy saprolite

Chewacla Series

Depth class: Very deep to bedrock
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Loamy alluvial sediments
Landform: Flood plains
Slope range: 0 to 2 percent
Classification: Fine-loamy, mixed, semiactive, thermic Fluvaquentic Dystrochrepts

Geographically Associated Soils

- Altavista soils, which have an argillic horizon, are moderately well drained, and are on low stream terraces

- Cartecay soils, which have a coarse-loamy particle-size control section
- Fork soils, which have an argillic horizon, have base saturation greater than 35 percent, and are on low stream terraces
- Pageland soils, which have an argillic horizon, have a fine-silty particle-size control section, have soft bedrock at a depth of 20 to 40 inches, are moderately well drained, and are not subject to flooding
- Roanoke soils, which have an argillic horizon, have a clayey particle-size control section, and are poorly drained
- Shellbluff soils, which have a fine-silty particle-size control section and are moderately well drained
- Toccoa soils, which have a coarse-loamy particle-size control section and are moderately well drained
- Wehadkee soils, which are poorly drained

Typical Pedon

Chewacla loam, frequently flooded; in Wilkes County, 1.4 miles northeast of Flint Hill Church on a county dirt road, 3,450 feet west-northwest (306 degrees); USGS topographic quadrangle, Celeste, GA (1971); lat. 33 degrees 51 minutes 12 seconds N. and long. 82 degrees 47 minutes 48 seconds W.

A—0 to 6 inches; yellowish brown (10YR 5/4) loam; weak medium granular structure; very friable; common fine and medium roots; few fine flakes of mica; moderately acid; clear smooth boundary.

Bw1—6 to 21 inches; brown (7.5YR 5/4) clay loam; weak medium subangular blocky structure; friable; common medium roots; few fine flakes of mica; common medium very dark grayish brown (10YR 3/2) and few medium light brownish gray (10YR 6/2) iron depletions; moderately acid; clear smooth boundary.

Bw2—21 to 36 inches; brown (7.5YR 5/4) clay loam; weak medium subangular blocky structure; friable; few medium and coarse roots; few fine flakes of mica; many medium dark brown (7.5YR 3/2) and many medium light brownish gray (10YR 6/2) iron depletions; moderately acid; abrupt smooth boundary.

Bg—36 to 45 inches; light brownish gray (10YR 6/2) sandy clay loam; weak fine subangular blocky structure; friable; few medium and coarse roots; few fine flakes of mica; common medium pale brown (10YR 6/3) iron accumulations; moderately acid; clear smooth boundary.

Cg—45 to 60 inches; light gray (10YR 7/1) sandy clay loam; massive; friable; few coarse roots; few fine flakes of mica; common medium pale brown (10YR 6/3) iron accumulations; slightly acid.

Range in Characteristics

Thickness of the solum: 15 to more than 60 inches
Depth to hard bedrock: More than 60 inches
Content of flakes of mica: Few to many throughout the profile
Content of rock fragments: 0 to 5 percent in the A horizon and the upper part of the B horizon; 0 to 15 percent in the lower part of the B horizon; 0 to 35 percent below a depth of 40 inches
Depth to iron depletions with chroma of 2 or less: 0 to 24 inches
Reaction: Very strongly acid to slightly acid to a depth of 40 inches in unlimed areas; very strongly acid to slightly alkaline below a depth of 40 inches

A or Ap horizon:
Thickness—3 to 8 inches
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 1 to 4

AB or BA horizon (if it occurs):
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 7, and chroma of 3 to 6
Texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

Bw horizon:
Color—hue of 5YR, 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 3 to 8
Iron accumulations or depletions—few to many in shades of red, brown, yellow, or gray
Texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

Bg, BC, or BCg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Iron accumulations or depletions—few to many in shades of red, brown, yellow, or gray
Texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

C or Cg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Iron accumulations or depletions—few to many in shades of red, brown, yellow, or gray
Texture—loamy within a depth of 40 inches; variable below a depth of 40 inches, ranging from sand to clay in the fine-earth fraction

Enon Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Parent material: Residuum weathered from mafic or intermediate igneous and high-grade metamorphic rocks, such as diorite, gabbro, diabase, and hornblende schist
Landform: Hills
Slope range: 2 to 10 percent
Classification: Fine, mixed, active, thermic Ultic Hapludalfs

Geographically Associated Soils

- Helena soils, which are moderately well drained
- Lloyd soils, which have a dark red subsoil and have base saturation of less than 35 percent
- Mecklenburg soils, which have a redder subsoil than the Enon soils
- Wilkes soils, which have soft bedrock at a depth of 10 to 20 inches and hard bedrock at a depth of 40 to more than 60 inches
- Zion soils, which have hard bedrock at a depth of 20 to 40 inches

Typical Pedon

Enon fine sandy loam, 2 to 6 percent slopes; in Wilkes County, 1.7 miles west from Norman on Norman Road, 0.7 mile south on a woodland road, 100 feet south-southeast (165 degrees) of the road; USGS topographic quadrangle, Jacksons Crossroads, GA (1970); lat. 33 degrees 55 minutes 04 seconds N. and long. 82 degrees 46 minutes 58 seconds W.

A—0 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; few medium manganese concretions; strongly acid; clear smooth boundary.

Bt1—8 to 21 inches; brownish yellow (10YR 6/6) clay; moderate medium subangular blocky structure; very firm, sticky and plastic; few fine and medium roots; common distinct clay films on faces of peds; common medium manganese concretions; strongly acid; gradual smooth boundary.

Bt2—21 to 30 inches; olive yellow (2.5Y 6/6) clay; moderate coarse subangular blocky structure; very firm, very sticky and very plastic; few fine and medium roots; many distinct clay films on faces of peds; few medium manganese concretions; moderately acid; gradual smooth boundary.

Bt3—30 to 34 inches; light olive brown (2.5Y 5/4) clay; moderate medium subangular blocky structure; very firm, very sticky and very plastic; few fine and medium roots; few distinct clay films on faces of peds; moderately acid; gradual smooth boundary.

BC—34 to 38 inches; olive (5Y 5/3) clay loam; common coarse light olive brown (2.5Y 5/4) mottles; weak medium subangular blocky structure; firm, sticky and plastic; few medium roots; few distinct clay films on faces of peds; slightly acid; gradual smooth boundary.

C—38 to 60 inches; olive (5Y 5/3) saprolite that crushes to clay loam; massive; very friable; neutral.

Range in Characteristics

Thickness of the solum: 20 to 50 inches

Depth to bedrock: More than 60 inches

Content of dark manganese concretions: Few or common throughout the profile in most pedons

Content of rock fragments: 0 to 35 percent in the A and E horizons; 0 to 15 percent in the B and C horizons

Reaction: Strongly acid to slightly acid in the upper part of the profile in unlimed areas; moderately acid to slightly alkaline in the lower part

A or Ap horizon:

Thickness—2 to 8 inches

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 3 to 5, and chroma of 2 to 4

E horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4

Texture—sandy loam, fine sandy loam, or loam

BA or BE horizon (if it occurs):

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 3 to 8

Texture—loam, sandy clay loam, or clay loam

Bt horizon:

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 4 to 8

Mottles—none to many in shades of red, brown, or yellow in the lower part of the horizon

Texture—clay loam or clay

BC or CB horizon (if it occurs):

Color—hue of 7.5YR, 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 3 to 6

Mottles—few to many in shades of red, brown, or yellow

Texture—loam, sandy clay loam, or clay loam

C horizon:

Color—multicolored

Texture—loamy saprolite

Fork Series

Depth class: Very deep to bedrock
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Loamy alluvial sediments
Landform: Low stream terraces
Slope range: 0 to 2 percent
Classification: Fine-loamy, mixed, semiactive, thermic Aeric Endoaqualfs

Geographically Associated Soils

- Altavista soils, which have base saturation of less than 35 percent and are moderately well drained
- Cartecay soils, which do not have an argillic horizon, have a coarse-loamy particle-size control section, and are on flood plains
- Chewacla soils, which do not have an argillic horizon and are on flood plains
- Shellbluff soils, which do not have an argillic horizon, have a fine-silty particle-size control section, are moderately well drained, and are on flood plains
- Toccoa soils, which do not have an argillic horizon, have a coarse-loamy particle-size control section, are moderately well drained, and are on flood plains
- Roanoke soils, which have a clayey particle-size control section and are poorly drained
- Wehadkee soils, which do not have an argillic horizon, are poorly drained, and are on flood plains

Typical Pedon

Fork silt loam, 0 to 2 percent slopes, occasionally flooded; in Wilkes County, 3,800 feet southwest of the confluence of Susan Smith Branch and Long Creek; USGS topographic quadrangle, Jacksons Crossroads, GA (1970); lat. 33 degrees 56 minutes 30 seconds N. and long. 82 degrees 49 minutes 20 seconds W.

A—0 to 3 inches; brown (10YR 4/3) silt loam; weak medium granular structure; very friable; few fine and common medium and coarse roots; very strongly acid; clear smooth boundary.

BE—3 to 9 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; very friable; few fine and common medium and coarse roots; very strongly acid; clear smooth boundary.

Bt1—9 to 13 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; common distinct clay films on faces of peds; common manganese concretions; few fine strong brown (7.5YR 5/6) iron accumulations and many medium brown (10YR 5/3) iron depletions; moderately acid; clear smooth boundary.

Bt2—13 to 19 inches; brown (10YR 5/3) sandy clay loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; common distinct clay films on faces of peds; common manganese concretions; common medium grayish brown (10YR 5/2) iron depletions; moderately acid; clear smooth boundary.

Btg1—19 to 28 inches; gray (10YR 6/1) sandy clay loam; moderate medium subangular blocky structure; friable; few very fine and fine roots; common distinct clay films on faces of peds; few medium brown (7.5YR 5/4) and common medium yellowish brown (10YR 5/4) iron accumulations; slightly acid; clear smooth boundary.

Btg2—28 to 46 inches; gray (10YR 6/1) clay loam; strong coarse subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; common coarse strong brown (7.5YR 5/8) iron accumulations; slightly acid; gradual smooth boundary.

Cg—46 to 60 inches; light brownish gray (10YR 6/2) sandy loam; massive; friable; many coarse yellowish brown (10YR 5/6) iron accumulations; neutral.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 10 percent in the A, E, and B horizons; 0 to 20 percent in the Cg horizon
Depth to iron depletions with chroma of 2 or less: More than 12 inches
Reaction: Very strongly acid to moderately acid in the A, E, BA, and BE horizons; very strongly acid to neutral in the Bt, Btg, and BC horizons; slightly acid or neutral in the Cg horizon

A or Ap horizon:
Thickness—0 to 3 inches
Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 4

E horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Texture—fine sandy loam, loam, or silt loam

BA or BE horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6
Iron accumulations or depletions—none to many in shades of red, brown, yellow, or gray
Texture—fine sandy loam, loam, or silt loam

Bt horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6
Iron accumulations or depletions—none to common in shades of red, brown, or yellow; none to common in shades of gray below a depth of 12 inches
Texture—loam, sandy clay loam, or clay loam; less than 40 percent silt plus very fine sand

Btg horizon:
Color—horizon is neutral in hue or has hue of 10YR, 2.5Y, or 5Y, has value of 5 or 6, and has chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—loam, sandy clay loam, or clay loam; less than 40 percent silt plus very fine sand

BCg horizon (if it occurs):
Color—hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—loamy fine sand, sandy loam, loam, sandy clay loam, or silty clay loam

Cg horizon:
Color—hue of 7.5YR, 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—loamy fine sand, sandy loam, loam, sandy clay loam, or silty clay loam; commonly stratified

Georgeville Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine, kaolinitic, thermic Typic Hapludults

Geographically Associated Soils

- Badin soils, which have soft bedrock at a depth of 20 to 40 inches
- Herndon soils, which have a yellower subsoil than the Georgeville soils
- Lloyd soils, which have a dark red subsoil
- Mecklenburg soils, which have a sticky and plastic subsoil and have base saturation greater than 35 percent
- Pageland soils, which have a yellower subsoil than the Georgeville soils, have soft bedrock at a depth of 20 to 40 inches, and are moderately well drained
- Wilkes and Zion soils, which formed in residuum weathered from mafic rocks

Typical Pedon

Georgeville silt loam, 2 to 6 percent slopes; in Lincoln County, 0.5 mile west of Amity on a paved county road, 50 feet south of the road; USGS topographic quadrangle, Woodlawn, GA (1971); lat. 33 degrees 40 minutes 37 seconds N. and long. 82 degrees 29 minutes 58 seconds W.

Ap—0 to 6 inches; strong brown (7.5YR 4/6) silt loam; weak fine granular structure; very friable; common fine and medium roots; few fine manganese concretions; very strongly acid; clear smooth boundary.

Bt1—6 to 15 inches; red (2.5YR 5/6) silty clay; moderate medium subangular blocky structure; firm; few fine and medium roots; few distinct clay films on faces of peds; few fine manganese concretions; very strongly acid; gradual smooth boundary.

Bt2—15 to 24 inches; red (2.5YR 4/6) clay; few medium yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few medium and coarse roots; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—24 to 45 inches; red (10R 4/6) clay; common medium strong brown (7.5YR 5/6) mottles; strong medium subangular blocky structure; firm; few medium and coarse roots; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

BC—45 to 50 inches; red (10R 4/6) silty clay loam; common medium strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few coarse roots; few distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

C—50 to 60 inches; red (10R 4/6) saprolite that crushes to silty clay loam; many strong brown (7.5YR 5/6) mottles; massive; friable; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 20 percent in the A and E horizons; 0 to 10 percent in the B and C horizons

Content of manganese concretions: None or few in the A and E horizons and the upper part of the Bt horizon
Reaction: Very strongly acid or strongly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—2 to 8 inches
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 2 to 6
Texture—silt loam or clay loam

E horizon (if it occurs):
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—very fine sandy loam, loam, or silt loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—none to many in shades of red, brown, or yellow
Texture—clay loam, silty clay, or clay; average of more than 30 percent silt

BC horizon:
Color—hue of 10R, 2.5YR, or 5YR, value of 4 to 6, and chroma of 6 or 8
Mottles—none to many in shades of red, brown, or yellow
Texture—clay loam or silty clay loam

C horizon:
Color—hue of 10R, 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 or 6, and chroma of 4 to 8
Mottles—none to many in shades of red, brown, or yellow
Texture—saprolite that crushes to loam, silt loam, or silty clay loam

Helena Series

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Slow
Parent material: Residuum weathered from a mixture of felsic and intermediate igneous or high-grade metamorphic rocks, such as aplitic granite, granite gneiss, or metadacite that is cut with dikes of gabbro and diorite
Landform: Hills and areas around the head of drainageways
Slope range: 2 to 15 percent
Classification: Fine, mixed, semiactive, thermic Aquic Hapludults

Geographically Associated Soils

- Appling and Wedowee soils, which are well drained
- Cecil and Pacolet soils, which have a redder subsoil than the Helena soils and are well drained
- Enon, Mecklenburg, and Zion soils, which formed in residuum weathered from mafic rocks
- Madison soils, which contain more mica and have a redder subsoil than the Helena soils and are well drained

Typical Pedon

Helena sandy loam, 6 to 10 percent slopes; in Wilkes County, 0.9 mile northeast of Shiloh Church on Broad Road, 300 feet southeast of a road in a pine forest; USGS topographic quadrangle, Broad, GA (1972); lat. 33 degrees 57 minutes 31 seconds N. and long. 82 degrees 41 minutes 15 seconds W.

A—0 to 4 inches; dark gray (10YR 4/1) sandy loam; weak fine granular structure; very friable; few medium roots; strongly acid; clear smooth boundary.
E—4 to 11 inches; pale yellow (2.5Y 7/4) sandy loam; weak fine granular structure; very friable; few medium roots; strongly acid; gradual smooth boundary.
BE—11 to 18 inches; brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; very strongly acid; gradual smooth boundary.
Bt1—18 to 27 inches; brownish yellow (10YR 6/6) sandy clay; moderate medium subangular blocky structure; firm, sticky and plastic; few medium roots; common prominent clay films on faces of peds; few medium manganese concretions; common medium red (2.5YR 5/8) iron accumulations; very strongly acid; gradual smooth boundary.
Bt2—27 to 37 inches; brownish yellow (10YR 6/6) clay; moderate coarse angular blocky structure; very firm, sticky and very plastic; common prominent clay films on faces of peds; many medium red (2.5YR 5/8) iron accumulations and common medium light brownish gray (10YR 6/2) iron depletions; strongly acid; abrupt smooth boundary.
BC—37 to 45 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium angular blocky structure; firm, sticky and plastic; few distinct clay films on faces of peds; many medium light brownish gray (10YR 6/2) iron depletions; strongly acid; abrupt smooth boundary.
C—45 to 60 inches; olive (5Y 5/4) saprolite that crushes to loam; massive; friable; many medium yellow (10YR 7/8) iron accumulations; strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 35 percent throughout the profile
Depth to iron depletions with chroma of 2 or less: Within 24 inches of the upper boundary of the Bt horizon
Content of manganese concretions: None to common in the upper part of the solum
Reaction: Extremely acid to strongly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—4 to 8 inches
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 4

E horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4
Texture—loamy coarse sand, coarse sandy loam, or sandy loam

BE or BA horizon (if it occurs):
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 3 to 6
Texture—sandy clay loam or clay loam in the fine-earth fraction

Bt horizon:
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 8, and chroma of 3 to 8; in some pedons, horizon has hue of 5YR in the lower part or is mottled in shades of red, brown, yellow, or gray
Iron accumulations or depletions—none to many in shades of red, brown, or yellow; few to many in shades of gray within 24 inches of the upper boundary
Texture—sandy clay loam, clay loam, silty clay, or clay in the fine-earth fraction

Btg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2

Iron accumulations—none to many in shades of red, brown, or yellow
Texture—clay loam, sandy clay, or clay in the fine-earth fraction

BC or BCg horizon (if it occurs):
Color—BC horizon is similar in color to the Bt horizon; BCg horizon is similar in color to the Btg horizon
Iron accumulations or depletions—few to many in shades of red, brown, yellow, or gray
Texture—clay loam, sandy clay, or clay in the fine-earth fraction

C horizon:
Color—hue of 7.5YR, 10YR, 2.5Y, or 5Y, value of 5 to 8, and chroma of 3 to 8
Iron accumulations or depletions—common or many in shades of red, brown, yellow, or gray
Texture—saprolite that crushes to sandy loam, loam, or sandy clay loam in the fine-earth fraction

Cg horizon (if it occurs):
Color—horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 1 or 2 and is typically mottled in shades of brown or yellow
Iron accumulations—common or many in shades of red, brown, or yellow
Texture—saprolite that crushes to sandy loam, loam, or sandy clay loam in the fine-earth fraction

Herndon Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from Carolina Slates and other fine grained rocks
Landform: Hills
Slope range: 2 to 10 percent
Classification: Fine, kaolinitic, thermic Typic Hapludults

Geographically Associated Soils

- Badin soils, which have soft bedrock at a depth of 20 to 40 inches
- Georgeville soils, which have a redder subsoil than the Herndon soils
- Pageland soils, which have soft bedrock at a depth of 20 to 40 inches and are moderately well drained
- Zion soils, which formed in residuum weathered from mafic rocks

Typical Pedon

Herndon very fine sandy loam, 2 to 6 percent slopes; in Wilkes County, 1,000 feet east of the intersection of Holiday Road and Aonia Road, 150 feet north of Holiday Road; USGS topographic quadrangle, Aonia, GA (1972); lat. 82 degrees 42 minutes 25 seconds N. and long. 33 degrees 35 minutes 14 seconds W.

Ap—0 to 4 inches; pale brown (10YR 6/3) very fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; abrupt smooth boundary.
E—4 to 11 inches; light yellowish brown (10YR 6/4) very fine sandy loam; weak fine granular structure; very friable; few very fine and fine roots; very strongly acid; clear smooth boundary.

Bt1—11 to 23 inches; brownish yellow (10YR 6/6) silty clay loam; few fine yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; firm; few fine and medium roots; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—23 to 30 inches; brownish yellow (10YR 6/6) silty clay; many fine red (2.5YR 5/8) and common fine very pale brown (10YR 7/4) mottles; moderate medium subangular blocky structure; firm; few fine and medium roots; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—30 to 38 inches; brownish yellow (10YR 6/8) clay; common fine red (2.5YR 5/8) and common fine very pale brown (10YR 7/4) mottles; moderate medium subangular blocky structure; firm; few fine and medium roots; many prominent clay films on faces of peds; very strongly acid; gradual smooth boundary.

BC—38 to 50 inches; brownish yellow (10YR 6/8) silty clay loam; many coarse red (2.5YR 4/8) and many coarse very pale brown (10YR 7/4) mottles; weak medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

C—50 to 60 inches; brownish yellow (10YR 6/8) saprolite that crushes to silt loam; many coarse red (2.5YR 4/8) and many coarse very pale brown (10YR 7/4) mottles; massive; friable; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 20 percent in the A and E horizons; 0 to 10 percent in the B and C horizons
Reaction: Very strongly acid to slightly acid in the A and E horizons in unlimed areas; extremely acid to strongly acid in the B and C horizons

A or Ap horizon:
Thickness—3 to 9 inches
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 or 4
Texture—very fine sandy loam or silt loam in the fine-earth fraction

Bt horizon:
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 7, and chroma of 4 to 8
Mottles—none to common in shades of red, brown, or yellow
Texture—silty clay loam, silty clay, or clay; average of more than 30 percent silt

BC horizon (if it occurs):
Color—hue of 5YR, 7.5YR, or 10YR, value of 5 to 7, and chroma of 4 to 8
Mottles—none to common in shades of red, brown, yellow, or white
Texture—silt loam, clay loam, or silty clay loam

C horizon:
Color—multicolored in shades of red, brown, yellow, and white
Texture—saprolite that crushes to fine sandy loam, loam, or silt loam

Lloyd Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate

Parent material: Residuum derived from intermediate and mafic, igneous and high-grade metamorphic rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine, kaolinitic, thermic Rhodic Kanhapludults

Geographically Associated Soils

- Cecil and Pacolet soils, which do not have a dark red subsoil
- Enon soils, which have a yellower subsoil than the Lloyd soils and have base saturation greater than 35 percent
- Georgeville soils, which do not have a dark red subsoil and formed in residuum weathered from Carolina Slates and other fine grained rocks
- Madison soils, which do not have a dark red subsoil and have a higher content of mica than the Lloyd soils
- Mecklenburg soils, which have base saturation greater than 35 percent

Typical Pedon

Lloyd loam, 2 to 6 percent slopes; in Wilkes County, 0.9 mile east of the intersection of U.S. Highway 78 Bypass and Georgia Highway 17 in Washington, 0.1 mile north on Little League Road, 80 feet west of the road; USGS topographic quadrangle, Washington East, GA (1972); lat. 33 degrees 44 minutes 19 seconds N. and long. 82 degrees 43 minutes 13 seconds W.

Ap—0 to 6 inches; dark reddish brown (5YR 3/4) loam; weak medium granular structure; friable; common fine and medium and few coarse roots; strongly acid; gradual smooth boundary.

Bt1—6 to 11 inches; dark reddish brown (2.5YR 3/4) sandy clay; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; many fine and few medium and coarse roots; few distinct clay films on faces of peds; common fine dark concretions; few fine flakes of mica; strongly acid; gradual smooth boundary.

Bt2—11 to 25 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm, slightly sticky and moderately plastic; common fine and few medium and coarse roots; common distinct clay films on faces of peds; common fine dark concretions; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt3—25 to 43 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm, slightly sticky and moderately plastic; common fine and few medium roots; common distinct clay films on faces of peds; common fine dark concretions; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt4—43 to 53 inches; red (2.5YR 4/6) sandy clay; weak medium subangular blocky structure; firm, slightly sticky and slightly plastic; few fine and medium roots; common distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

BC—53 to 60 inches; red (2.5YR 4/6) sandy clay loam; few medium reddish yellow (7.5YR 6/6) mottles; weak medium subangular blocky structure; friable, slightly sticky and slightly plastic; common distinct clay films on faces of peds; common fine flakes of mica; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 15 percent throughout the profile

Content of flakes of mica: Few or common in the solum; few to many in the C horizon in most pedons
Reaction: Very strongly acid to slightly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—4 to 9 inches
Color—hue of 10R, 2.5YR, or 5YR, value of 2 or 3, and chroma of 2 to 6
Texture—loam or clay loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 3 or 4, and chroma of 4 to 8; at least one subhorizon has moist value of 3 or less and at least one subhorizon has moist value of more than 3
Mottles—none to common in shades of red, brown, or yellow in the lower part of the horizon
Texture—clay loam, sandy clay, or clay

BC horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 4 to 8
Mottles—none to common in shades of red, brown, or yellow
Texture—sandy clay loam or clay loam

C horizon (if it occurs):
Color—horizon has hue of 10R, 2.5YR, 5YR, or 7.5YR, value of 3 to 5, and chroma of 4 to 8 or is mottled in these colors
Texture—saprolite that crushes to sandy loam, loam, sandy clay loam, or clay loam

Madison Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic and intermediate, micaceous high-grade metamorphic rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine, kaolinitic, thermic Typic Kanhapludults

Geographically Associated Soils

- Appling and Wedowee soils, which have a yellower subsoil and contain less mica than the Madison soils
- Cecil and Pacolet soils, which contain less mica than the Madison soils
- Helena soils, which have a yellower subsoil than the Madison soils and are moderately well drained
- Lloyd soils, which have a dark red subsoil and contain less mica than the Madison soils
- Mecklenburg soils, which have base saturation greater than 35 percent, contain less mica than the Madison soils, and formed in residuum weathered from mafic rocks

Typical Pedon

Madison sandy loam, 2 to 6 percent slopes; in Wilkes County, 0.3 mile east of Phillips Mill Baptist Church on Georgia Highway 44, about 0.5 mile north on a dirt road, 150 feet east in a pine plantation; USGS topographic quadrangle, Philomath, GA (1966); lat. 33 degrees 40 minutes 35 seconds N. and long. 82 degrees 52 minutes 44 seconds W.

Ap—0 to 5 inches; yellowish red (5YR 5/6) sandy loam; weak fine granular structure; very friable; few fine and common medium roots; few fine flakes of mica; very strongly acid; clear smooth boundary.

BA—5 to 7 inches; red (2.5YR 4/8) sandy clay loam; weak fine subangular blocky structure; friable; common medium roots; few fine flakes of mica; very strongly acid; gradual smooth boundary.

Bt—7 to 25 inches; red (2.5YR 5/8) sandy clay; moderate medium subangular blocky structure; firm; common medium roots; common distinct clay films on faces of peds; many fine and medium flakes of mica; very strongly acid; gradual smooth boundary.

BC—25 to 37 inches; red (10R 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few medium roots; few distinct clay films on faces of peds; many fine and medium flakes of mica; very strongly acid; gradual smooth boundary.

C1—37 to 46 inches; red (10R 5/8) saprolite that crushes to sandy clay loam; massive; very friable; few fine and medium roots; many fine and medium flakes of mica; very strongly acid; gradual smooth boundary.

C2—46 to 60 inches; red (2.5YR 5/8) saprolite that crushes to sandy clay loam; massive; very friable; many fine and medium flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 50 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 25 percent in the A and E horizons; 0 to 15 percent in the B and C horizons
Content of flakes of mica: Few to many in the upper part of the solum; many in the lower part of the solum
Reaction: Very strongly acid to moderately acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—3 to 8 inches
Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 3 to 6
Texture—sandy loam or sandy clay loam

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6
Texture—sandy loam or fine sandy loam

BA or BE horizon (if it occurs):
Color—hue of 2.5YR, 5YR, or 7.5YR, value of 4 or 5, and chroma of 3 to 8
Texture—sandy loam, loam, or sandy clay loam

Bt horizon:
Color—hue of 10R, 2.5YR, or 5YR, value of 4 to 6, and chroma of 4 to 8; subhorizons with hue of 7.5YR in some pedons
Texture—clay loam, sandy clay, or clay

BC horizon (if it occurs):
Color—hue of 10R, 2.5YR, or 5YR, value of 4 to 6, and chroma of 4 to 8
Mottles—none to many in shades of red, brown, or yellow
Texture—sandy loam, loam, sandy clay loam, or clay loam

C horizon:
Color—horizon has hue of 10R, 2.5YR, or 5YR, value of 4 to 6, and chroma of 3 to 8 or is mottled with these colors
Texture—saprolite that crushes to sandy loam, loam, sandy clay loam, or clay loam

Mecklenburg Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Slow
Parent material: Residuum weathered from intermediate and mafic crystalline rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine, mixed, active, thermic Ultic Hapludalfs

Geographically Associated Soils

- Cecil soils, which have base saturation of less than 35 percent, do not have a sticky and plastic subsoil, and formed in residuum weathered from felsic rocks
- Enon soils, which have a yellower subsoil than the Mecklenburg soils
- Georgeville soils, which have base saturation of less than 35 percent, do not have a sticky and plastic subsoil, and formed in residuum weathered from Carolina Slates and other fine grained rocks
- Helena soils, which have base saturation of less than 35 percent, have a yellower subsoil than the Mecklenburg soils, and are moderately well drained
- Lloyd soils, which have base saturation of less than 35 percent
- Madison soils, which have base saturation of less than 35 percent, do not have a sticky and plastic subsoil, contain more mica than the Mecklenburg soils, and formed in residuum weathered from felsic rocks
- Wilkes soils, which have soft bedrock at a depth of 10 to 20 inches and hard bedrock at a depth of 40 to more than 60 inches
- Zion soils, which have hard bedrock at a depth of 20 to 40 inches

Typical Pedon

Mecklenburg sandy loam, 2 to 6 percent slopes; in Wilkes County, 1.3 miles west of Georgia Highway 12 on Hawk's Nest Road, 500 feet south of a dirt road; USGS topographic quadrangle, Washington West, GA (1972); lat. 33 degrees 39 minutes 55 seconds N. and long. 82 degrees 47 minutes 2 seconds W.

Ap—0 to 8 inches; reddish brown (5YR 4/3) sandy loam; weak fine granular structure; very friable; common fine and few medium roots; common fine manganese concretions; slightly acid; abrupt smooth boundary.

Bt1—8 to 15 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm, moderately sticky and moderately plastic; common fine roots; common distinct clay films on faces of peds; few fine manganese concretions; slightly acid; gradual smooth boundary.

Bt2—15 to 27 inches; red (2.5YR 4/8) clay; few medium yellowish red (5YR 4/6) mottles; strong medium subangular blocky structure; firm, moderately sticky and moderately plastic; few fine roots; common prominent clay films on faces of peds; few fine manganese concretions; moderately acid; clear smooth boundary.

BC—27 to 32 inches; yellowish red (5YR 4/6) clay loam; many medium strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; few distinct clay films on faces of peds; few fine and medium manganese concretions; slightly acid; clear smooth boundary.

C1—32 to 50 inches; red (2.5YR 5/8) saprolite that crushes to clay loam; many coarse yellowish red (5YR 5/8) and many coarse strong brown (7.5YR 5/8) mottles; massive; friable; slightly acid; gradual smooth boundary.

C2—50 to 60 inches; yellowish red (5YR 5/8) saprolite that crushes to loam; many coarse strong brown (7.5YR 5/6) and many coarse yellowish brown (10YR 5/8) mottles; massive; very friable; slightly acid.

Range in Characteristics

Thickness of the solum: 20 to 55 inches
Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 20 percent in the A horizon; 0 to 10 percent in the B and C horizons
Content of manganese concretions: Few to many in the A and B horizons
Reaction: Strongly acid to slightly acid in the A horizon in unlimed areas; moderately acid to neutral in the B and C horizons

A or Ap horizon:
Thickness—2 to 9 inches
Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 to 6, and chroma of 2 to 6
Texture—sandy loam or sandy clay loam

BA or BE horizon (if it occurs):
Color—hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 4 to 8
Texture—loam, sandy clay loam, or clay loam

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 4 to 8
Mottles—none to many in shades of red, brown, or yellow in the lower part of the horizon
Texture—clay

BC horizon:
Color—hue of 2.5YR, 5YR, or 7.5YR, value of 4 to 7, and chroma of 4 to 8
Mottles—few to many in shades of red, brown, or yellow in the lower part of the horizon in most pedons
Texture—loam, sandy clay loam, or clay loam

C horizon:
Color—horizon is multicolored or mottled in shades of red, brown, or yellow
Texture—loamy saprolite

Pacolet Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic crystalline rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine, kaolinitic, thermic Typic Kanhapludults

Geographically Associated Soils

- Appling and Wedowee soils, which have a yellower subsoil than the Pacolet soils
- Ashlar soils, which do not have an argillic horizon and have hard bedrock at a depth of 20 to 40 inches
- Cecil soils, which have a solum that is 40 to more than 60 inches thick
- Helena soils, which have a yellower subsoil than the Pacolet soils and are moderately well drained
- Lloyd soils, which have a dark red subsoil

- Madison soils, which contain more mica than the Pacolet soils
- Rion soils, which have a fine-loamy particle-size control section
- Wake soils, which do not have an argillic horizon and have hard bedrock at a depth of 11 to 20 inches
- Wateree soils, which do not have an argillic horizon and have soft bedrock at a depth of 20 to 40 inches

Typical Pedon

Pacolet fine gravelly loamy coarse sand, 2 to 6 percent slopes; in Lincoln County, 1.3 miles southwest of the intersection of Georgia Highways 44 and 79, about 100 feet south of Georgia Highway 44, in a cultivated field; USGS topographic quadrangle, Chennault, GA (1955); lat. 33 degrees 53 minutes 32 seconds N. and long. 82 degrees 37 minutes 04 seconds W.

Ap—0 to 6 inches; brown (7.5YR 5/4) fine gravelly loamy coarse sand; weak fine granular structure; very friable; many very fine roots; few fine flakes of mica; 20 percent fine quartz pebbles; moderately acid; clear smooth boundary.

BA—6 to 8 inches; yellowish red (5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable; common very fine and fine roots; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt—8 to 26 inches; red (2.5YR 4/8) sandy clay; moderate medium subangular blocky structure; firm; common very fine roots; common distinct clay films on faces of peds; few fine flakes of mica; very strongly acid; clear smooth boundary.

BC—26 to 29 inches; red (2.5YR 4/8) sandy clay loam; common medium reddish yellow (5YR 6/8) mottles; weak fine subangular blocky structure; friable; few very fine roots; common distinct clay films on faces of peds; common fine flakes of mica; very strongly acid; gradual smooth boundary.

C—29 to 60 inches; reddish yellow (5YR 5/8) saprolite that crushes to sandy clay loam; many coarse red (2.5YR 4/8) and many coarse very pale brown (10YR 8/3) mottles; massive; friable; common fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches; the Bt horizon is at least 12 inches thick and extends to a depth of 18 to 30 inches

Depth to bedrock: More than 60 inches

Content of flakes of mica: None to common in the solum; few to many in the C horizon

Content of rock fragments: 0 to 35 percent in the A and E horizons; 0 to 15 percent in the B and C horizons

Reaction: Very strongly acid to slightly acid in the A horizon in unlimed areas; very strongly acid to moderately acid in the B and C horizons

A or Ap horizon:

Thickness—1 to 8 inches

Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 2 to 6

Texture—loamy coarse sand, sandy loam, or sandy clay loam in the fine-earth fraction

E horizon (if it occurs):

Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 3 to 6

Texture—loamy coarse sand or sandy loam in the fine-earth fraction

BA or BE horizon (if it occurs):

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 3 to 8

Texture—loam, sandy clay loam, or clay loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—none to common in shades of red, brown, or yellow
Texture—clay loam, sandy clay, or clay

BC horizon:
Color—hue of 10R, 2.5YR, or 5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—few or common in shades of red, brown, or yellow
Texture—loam, sandy clay loam, or clay loam

C horizon:
Color—hue of 10R, 2.5YR, or 5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—few to many in shades of red, brown, or yellow
Texture—loamy saprolite

Pageland Series

Depth class: Moderately deep to bedrock
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Residuum weathered from Carolina Slates or other fine grained metamorphic rocks
Landform: Interstream divides and areas around the head of drainageways
Slope range: 0 to 6 percent
Classification: Fine-silty, siliceous, semiactive, thermic Ultic Hapludalfs

Geographically Associated Soils

- Badin soils, which are well drained
- Chewacla soils, which do not have an argillic horizon, are on flood plains, and are somewhat poorly drained
- Georgeville and Herndon soils, which have bedrock at a depth of more than 60 inches and are well drained

Typical Pedon

Pageland silt loam, 0 to 6 percent slopes; in Lincoln County, 0.5 mile west-southwest of Clay Hill and 2.3 miles southeast of Amity; USGS topographic quadrangle, Woodlawn, GA (1971); lat. 33 degrees 39 minutes 43 seconds N. and long. 82 degrees 27 minutes 15 seconds W.

Ap—0 to 3 inches; dark grayish brown (2.5Y 4/2) silt loam; weak medium subangular blocky structure; friable; common medium and coarse roots; 5 percent slate channers; strongly acid; abrupt smooth boundary.
Bt1—3 to 12 inches; light olive brown (2.5Y 5/4) silty clay loam; medium coarse subangular blocky structure; friable; common medium and coarse roots; few distinct clay films on faces of peds; 5 percent slate channers; strongly acid; clear smooth boundary.
Bt2—12 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; medium coarse subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; common distinct clay films on faces of peds; few fine brown (10YR 5/3) mottles; 10 percent slate channers; strongly acid; clear smooth boundary.
Bt3—20 to 26 inches; light yellowish brown (10YR 6/4) silty clay loam; moderate coarse subangular blocky structure; friable; few fine roots; few distinct clay films on faces of peds; common medium strong brown (7.5YR 5/6) iron accumulations and common medium light brownish gray (10YR 6/2) iron depletions; 10 percent slate channers; moderately acid; gradual smooth boundary.

Cr—26 inches; multicolored yellowish red (5YR 5/6) and yellowish brown (10YR 5/4) weathered, fractured slate; can be dug with difficulty with a spade; few widely spaced seams of light brownish gray (10YR 6/2) silty clay loam in fractures.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to weathered bedrock: 20 to 40 inches
Depth to hard bedrock: More than 40 inches
Content of rock fragments: 0 to 15 percent in the A and E horizons; 0 to 10 percent in the B horizon
Depth to iron depletions with chroma of 2 or less: Within 24 inches of the upper boundary of the Bt horizon
Reaction: Extremely acid to strongly acid in the A and E horizons and the upper part of the Bt horizon in unlimed areas; very strongly acid to moderately acid in the lower part of the Bt horizon and in the BC horizon

A or Ap horizon:
Thickness—2 to 8 inches
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 10YR, 2.5Y, or 5Y, value of 5 to 8, and chroma of 4 to 8
Texture—loam or silt loam

Bt horizon (upper part):
Color—hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 4 to 8
Mottles—none to common in shades of red, brown, or yellow
Texture—silt loam or silty clay loam

Bt horizon (lower part):
Color—hue of 7.5YR, 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 3 to 8
Iron accumulations or depletions—few or common in shades of red, brown, yellow, or gray
Texture—silt loam, silty clay loam, silty clay, or clay

Btg horizon (if it occurs):
Color—hue of 7.5YR, 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 2 to 8
Iron accumulations or depletions—few or common in shades of red, brown, yellow, or gray
Texture—silt loam, silty clay loam, silty clay, or clay

BC horizon (if it occurs):
Color—hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 3 to 8
Iron accumulations or depletions—few or common in shades of red, brown, yellow, or gray
Texture—silt loam, silty clay loam, or silty clay

BCg horizon (if it occurs):
Color—hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 2 to 8
Iron accumulations or depletions—few or common in shades of red, brown, yellow, or gray
Texture—silt loam, silty clay loam, or silty clay

Cr horizon:
Color—multicolored
Texture—fractured, weathered slate or other fine grained metamorphic rocks

Rion Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from acid crystalline rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine-loamy, mixed, semiactive, thermic Typic Hapludults

Geographically Associated Soils

- Appling, Cecil, Pacolet, and Wedowee soils, which have a clayey particle-size control section
- Ashlar soils, which do not have an argillic horizon and have hard bedrock at a depth of 20 to 40 inches
- Wake soils, which do not have an argillic horizon and have hard bedrock within a depth of 20 inches
- Wateree soils, which do not have an argillic horizon and have soft bedrock at a depth of 20 to 40 inches

Typical Pedon

Rion fine gravelly sandy loam in an area of Rion-Ashlar-Wake complex, 10 to 25 percent slopes; in Wilkes County, 1.4 miles south of Danburg and the Georgia Highway 44 intersection along a paved county road, 660 feet east of the road; USGS topographic quadrangle, Tignall, GA (1955); lat. 33 degrees 50 minutes 46 seconds N. and long. 82 degrees 38 minutes 44 seconds W.

Oi—1 inch to 0; slightly decomposed leaves, needles, and twigs; abrupt smooth boundary.

A—0 to 4 inches; brown (10YR 4/3) fine gravelly sandy loam; weak fine granular structure; very friable; many very fine and fine and few medium and coarse roots; 20 percent fine quartz pebbles; very strongly acid; clear smooth boundary.

E—4 to 10 inches; yellowish brown (10YR 5/4) fine gravelly sandy loam; weak fine granular structure; very friable; many very fine and fine roots; 20 percent fine quartz pebbles; very strongly acid; clear smooth boundary.

Bt1—10 to 13 inches; strong brown (7.5YR 5/6) fine gravelly sandy loam; weak fine subangular blocky structure; friable; common fine roots; few distinct clay films on faces of peds; few fine flakes of mica; 20 percent fine quartz pebbles; very strongly acid; clear smooth boundary.

Bt2—13 to 21 inches; red (2.5YR 4/8) fine gravelly sandy clay loam; weak medium subangular blocky structure; friable; few very fine and fine roots; common distinct clay films on faces of peds; few fine flakes of mica; 20 percent fine quartz pebbles; very strongly acid; gradual smooth boundary.

BC—21 to 23 inches; red (2.5YR 4/8) fine gravelly sandy loam; weak medium subangular blocky structure; friable; few fine roots; few distinct clay films on faces of peds; few fine flakes of mica; 25 percent fine quartz pebbles; very strongly acid; gradual smooth boundary.

C—23 to 60 inches; red (2.5YR 4/8) saprolite that crushes to fine gravelly sandy loam; many medium strong brown (7.5YR 5/6) mottles; massive; very friable; common fine flakes of mica; 30 percent quartz gravel; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches

Content of flakes of mica: None to common in the solum; few to many in the C horizon
Content of rock fragments: 0 to 35 percent throughout the profile
Reaction: Very strongly acid to slightly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—4 to 10 inches
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6
Texture—loamy coarse sand, fine sandy loam, or sandy loam in the fine-earth fraction

Bt horizon:
Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 4 to 8
Mottles—none to common in shades of red, brown, or yellow
Texture—sandy loam, sandy clay loam, or clay loam in the fine-earth fraction

BC horizon (if it occurs):
Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 4 to 8
Mottles—few to many in shades of red, brown, yellow, or white
Texture—sandy loam, loam, or sandy clay loam in the fine-earth fraction

C horizon:
Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 4 to 8
Mottles—few to many in shades of red, brown, yellow, or white
Texture—saprolite that crushes to sandy loam or sandy clay loam in the fine-earth fraction

Roanoke Series

Depth class: Very deep to bedrock
Drainage class: Poorly drained
Permeability: Slow
Parent material: Clayey alluvial sediments
Landform: Flood plains and low stream terraces
Slope range: 0 to 2 percent
Classification: Fine, mixed, semiactive, thermic Typic Endoaquults

Geographically Associated Soils

- Altavista soils, which have a fine-loamy particle-size control section and are moderately well drained
- Fork soils, which have base saturation greater than 35 percent, have a fine-loamy particle-size control section, and are somewhat poorly drained
- Wickham soils, which have a fine-loamy particle-size control section and are well drained
- Cartecay and Chewacla soils, which do not have an argillic horizon and are somewhat poorly drained
- Wehadkee soils, which do not have an argillic horizon and have a fine-loamy particle-size control section

Typical Pedon

Roanoke silt loam, occasionally flooded; in Wilkes County, 1.2 miles northeast of the Broad community on Moone Road, 1.3 miles north on a woodland road, 50 feet south

of the road; USGS topographic quadrangle, Broad, GA (1955); lat. 33 degrees 58 minutes 39 seconds N. and long. 83 degrees 58 minutes 39 seconds W.

A—0 to 2 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; moderately acid; clear smooth boundary.

Eg—2 to 8 inches; grayish brown (10YR 5/2) loam; weak medium granular structure; friable, slightly sticky and slightly plastic; common fine and few medium and coarse roots; common medium brown (10YR 4/3) iron accumulations; extremely acid; clear smooth boundary.

Btg1—8 to 21 inches; gray (10YR 6/1) clay; moderate medium subangular blocky structure; firm, moderately sticky and very plastic; few medium and coarse roots; few distinct clay films on faces of peds; common medium yellowish brown (10YR 5/6) iron accumulations; extremely acid; clear smooth boundary.

Btg2—21 to 35 inches; gray (10YR 6/1) clay; moderate medium subangular blocky structure; firm, moderately sticky and very plastic; few coarse roots; common distinct clay films on faces of peds; few medium yellowish brown (10YR 5/6) iron accumulations; extremely acid; gradual smooth boundary.

Btg3—35 to 44 inches; gray (10YR 5/1) clay; moderate medium subangular blocky structure; firm, slightly sticky and moderately plastic; few coarse roots; common distinct clay films on faces of peds; common medium yellowish brown (10YR 5/6) iron accumulations; extremely acid; clear smooth boundary.

BCg—44 to 50 inches; gray (10YR 5/1) sandy clay loam; weak medium subangular blocky structure; firm, slightly sticky and slightly plastic; few coarse roots; few distinct clay films on faces of peds; few medium yellowish brown (10YR 5/6) iron accumulations; extremely acid; clear smooth boundary.

Cg—50 to 60 inches; light brownish gray (2.5Y 6/2) sandy clay loam; massive; friable, slightly sticky and slightly plastic; few medium light yellowish brown (10YR 6/4) iron accumulations; extremely acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to highly stratified materials: More than 40 inches
Content of rock fragments: 0 to 10 percent in the solum; 0 to 50 percent in the substratum
Reaction: Extremely acid to strongly acid in the solum in unlimed areas; extremely acid to slightly acid in the substratum

A or Ap horizon:
Thickness—2 to 6 inches
Color—hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 1 or 2

Eg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Iron accumulations—none to many in shades of red, brown, or yellow
Texture—fine sandy loam, loam, silt loam, clay loam, or silty clay loam

Btg horizon:
Color—hue of 10YR, 2.5Y, or 5Y, value of 4 to 7, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—clay loam, silty clay loam, silty clay, or clay

BCg and Cg horizons:
Color—hue of 10YR, 2.5Y, or 5Y, value of 4 to 7, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—sandy clay loam, clay loam, silty clay loam, or clay; thin strata of coarser material in some pedons

2Cg horizon (if it occurs):
Color—highly variable
Texture—commonly stratified; ranging from sand to clay

Shellbluff Series

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Silty alluvial sediments
Landform: Flood plains
Slope range: 0 to 2 percent
Slope topography: Smooth
Classification: Fine-silty, mixed, semiactive, thermic Fluventic Dystrochrepts

Geographically Associated Soils

- Altavista soils, which have an argillic horizon, have a fine-loamy particle-size control section, are moderately well drained, and are on low stream terraces
- Cartecay soils, which have a coarse-loamy particle-size control section and are somewhat poorly drained
- Chewacla soils, which have a fine-loamy particle-size control section and are somewhat poorly drained
- Fork soils, which have an argillic horizon, have base saturation greater than 35 percent, have a fine-loamy particle-size control section, are somewhat poorly drained, and are on low stream terraces
- Toccoa soils, which have a coarse-loamy particle-size control section
- Wehadkee soils, which have a fine-loamy particle-size control section and are poorly drained
- Wickham soils, which have an argillic horizon, have a fine-loamy particle-size control section, and are not subject to flooding

Typical Pedon

Shellbluff silt loam, occasionally flooded; in Wilkes County, 0.4 mile north of Norman on Georgia Highway 17, about 0.3 mile west on a county road, 2 miles northwest on a woodland road, 1,400 feet northwest in a wooded area; USGS topographic quadrangle, Jacksons Crossroads, GA (1970); lat. 33 degrees 56 minutes 58 seconds N. and long. 82 degrees 48 minutes 13 seconds W.

A—0 to 3 inches; brown (7.5YR 4/2) silt loam; weak medium granular structure; friable; many fine roots; few fine flakes of mica; moderately acid; clear smooth boundary.

Bw1—3 to 11 inches; brown (7.5YR 5/4) silt loam; weak medium subangular blocky structure; friable; common fine and few medium roots; few fine flakes of mica; very strongly acid; clear smooth boundary.

Bw2—11 to 26 inches; brown (7.5YR 5/4) silt loam; weak medium subangular blocky structure; friable; few medium roots; few fine flakes of mica; common medium strong brown (7.5YR 5/6) iron accumulations; very strongly acid; abrupt smooth boundary.

Ab1—26 to 37 inches; very dark grayish brown (10YR 3/2) silt loam; weak medium granular structure; friable; few fine flakes of mica; very strongly acid; gradual smooth boundary.

Ab2—37 to 41 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; few fine flakes of mica; very strongly acid; gradual smooth boundary.

Bwb—41 to 52 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few fine flakes of mica; common medium strong brown (7.5YR 5/6) iron accumulations and common medium light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual smooth boundary.

Cb—52 to 60 inches; brown (7.5YR 5/4) loam; massive; very friable; few fine flakes of mica; common medium strong brown (7.5YR 5/6) iron accumulations and many medium light brownish gray (10YR 6/2) iron depletions; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to more than 40 inches
Depth to bedrock: More than 60 inches
Content of flakes of mica: None to common in the upper part of the profile; few or common in the lower part
Depth to iron depletions with chroma of 2 or less: More than 36 inches
Reaction: Very strongly acid to slightly acid throughout the profile in unlimed areas
Other characteristics: A buried A horizon, B horizon, or both occurring below a depth of 25 inches in some pedons; these horizons have the same colors and textures as the A and B horizons

A or Ap horizon:
Thickness—4 to 9 inches
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4

Bw horizon:
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 4 to 8
Iron accumulations or depletions—none to many in shades of red, brown, or yellow; few to many in shades of gray or white below a depth of 36 inches
Texture—loam, silt loam, clay loam, or silty clay loam

C, Cg, or Cb horizon:
Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 8, and chroma of 1 to 8
Iron accumulations or depletions—few to many in shades of red, brown, or yellow; few to many in shades of gray or white below a depth of 36 inches
Texture—loam, silt loam, clay loam, or silty clay loam; stratification of coarser material in some pedons

Toccoa Series

Depth class: Very deep to bedrock
Drainage class: Moderately well drained
Permeability: Moderately rapid
Parent material: Loamy alluvial sediments
Landform: Flood plains
Slope range: 0 to 2 percent
Slope topography: Smooth
Classification: Coarse-loamy, mixed, semiactive, nonacid, thermic Typic Udifluvents

Geographically Associated Soils

- Altavista soils, which have an argillic horizon, have a fine-loamy particle-size control section, are moderately well drained, and are on low stream terraces
- Cartecay soils, which are somewhat poorly drained
- Chewacla soils, which have a fine-loamy particle-size control section and are somewhat poorly drained
- Fork soils, which have an argillic horizon, have base saturation greater than 35

percent, have a fine-loamy particle-size control section, are somewhat poorly drained, and are on low stream terraces
- Shellbluff soils, which have a fine-silty particle-size control section
- Wehadkee soils, which have a fine-loamy particle-size control section and are poorly drained
- Wickham soils, which have an argillic horizon, have a fine-loamy particle-size control section, and are not subject to flooding

Typical Pedon

Toccoa loam, occasionally flooded; 5.1 miles south on Lundberg Road from the Wilkes County Courthouse in Washington to the intersection with Hallford Road, 4,960 feet west (281 degrees) from the intersection; USGS topographic quadrangle, Washington East, GA (1972); lat. 33 degrees 39 minutes 52 seconds N. and long. 82 degrees 44 minutes 57 seconds W.

A1—0 to 2 inches; brown (7.5YR 5/4) loam; weak medium granular structure; very friable; many fine roots; common fine flakes of mica; strongly acid; clear smooth boundary.
A2—2 to 8 inches; reddish brown (5YR 5/4) silt loam; moderate medium granular structure; friable; many fine roots; common fine flakes of mica; strongly acid; clear smooth boundary.
C1—8 to 17 inches; reddish brown (5YR 5/4) sandy loam; massive; very friable; common fine and medium roots; thin strata of fine sandy loam and loam; common fine flakes of mica; moderately acid; clear smooth boundary.
C2—17 to 30 inches; reddish brown (5YR 5/4) sandy loam; massive; very friable; common fine and medium roots; thin strata of loamy sand and silt loam; common fine flakes of mica; moderately acid; clear smooth boundary.
C3—30 to 52 inches; brown (7.5YR 5/4) fine sandy loam; massive; very friable; few medium roots; thin strata of loamy sand; common fine flakes of mica; common medium yellowish brown (7.5YR 5/8) iron accumulations and common medium light brownish gray (10YR 6/2) iron depletions; strongly acid; clear smooth boundary.
C4—52 to 60 inches; brownish yellow (10YR 6/6) loamy sand; massive; very friable; common fine flakes of mica; common medium yellowish brown (7.5YR 5/8) iron accumulations and common medium light brownish gray (10YR 6/2) iron depletions; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of flakes of mica: Few to many throughout the profile
Depth to iron depletions with chroma of 2 or less: More than 30 inches
Reaction: Strongly acid to slightly acid throughout the profile in unlimed areas, but moderately acid or slightly acid in a subhorizon in the 10- to 40-inch control section in all pedons

A or Ap horizon:
Thickness—4 to 10 inches
Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 2 to 4; where value is less than 4, horizon is less than 6 inches thick

C horizon:
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 4 to 8
Iron accumulations or depletions—few to many in shades of red, brown, or yellow; few to many in shades of gray or white below a depth of 30 inches
Texture—sandy loam or fine sandy loam; thin horizons, less than 10 inches thick, of sand, loamy sand, loam, sandy clay loam, or clay loam in some pedons

Wake Series

Depth class: Shallow to bedrock
Drainage class: Excessively drained
Permeability: Rapid
Parent material: Residuum weathered from igneous and high-grade metamorphic rocks, such as granite and gneiss
Landform: Knolls and areas near rock outcrops
Slope range: 2 to 25 percent
Classification: Mixed, thermic Lithic Udipsamments

Geographically Associated Soils

- Ashlar soils, which have hard bedrock at a depth of 20 to 40 inches
- Pacolet, Rion, and Wedowee soils, which have an argillic horizon and have bedrock at a depth of more than 60 inches
- Wateree soils, which have soft bedrock at a depth of 20 to 40 inches and hard bedrock at a depth of 40 to more than 60 inches

Typical Pedon

Wake fine gravelly loamy coarse sand in an area of Rion-Ashlar-Wake complex, 10 to 25 percent slopes; in Wilkes County, 0.8 mile northeast of Sandy Hill and 2.8 miles east of Tignall; USGS topographic quadrangle, Tignall, GA (1955); lat. 33 degrees 51 minutes 53 seconds N. and long. 82 degrees 41 minutes 33 seconds W.

Ap—0 to 4 inches; brown (10YR 4/3) fine gravelly loamy coarse sand; weak very coarse granular structure; very friable; many fine roots; common grains of feldspar; few fine flakes of mica; 20 percent fine quartz pebbles; moderately acid; clear smooth boundary.

C1—4 to 10 inches; yellowish brown (10YR 5/4) fine gravelly loamy coarse sand; single grained; loose; common fine and very fine roots; common grains of feldspar; few fine flakes of mica; 35 percent fine quartz pebbles; strongly acid; clear smooth boundary.

C2—10 to 17 inches; light yellowish brown (10YR 6/4) fine gravelly loamy coarse sand; single grained; loose; few very fine roots; common grains of feldspar; few fine flakes of mica; 20 percent fine quartz pebbles; strongly acid; abrupt smooth boundary.

R—17 inches; unweathered light-colored granite.

Range in Characteristics

Depth to hard bedrock: 8 to 20 inches
Content of rock fragments: 15 to 35 percent throughout the profile
Content of flakes of mica: Few or common throughout the profile
Content of feldspar grains: Few to many throughout the profile
Reaction: Very strongly acid to moderately acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—2 to 10 inches
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 1 to 4

C horizon:
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 or 6, and chroma of 4 to 8
Texture—saprolite that crushes to loamy coarse sand or loamy sand in the fine-earth fraction

Cr horizon (if it occurs):
Color—multicolored

Texture—weathered igneous or high-grade metamorphic rock, such as granite or gneiss

R layer:
Color—multicolored
Texture—unweathered igneous or high-grade metamorphic rock, such as granite or gneiss

Wateree Series

Depth class: Moderately deep to bedrock
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Residuum weathered from felsic crystalline rocks, commonly granite and gneiss
Landform: Hills
Slope range: 2 to 10 percent
Classification: Coarse-loamy, mixed, semiactive, thermic Typic Dystrochrepts

Geographically Associated Soils

- Ashlar soils, which have hard bedrock at a depth of 20 to 40 inches
- Pacolet, Rion, and Wedowee soils, which have an argillic horizon and have bedrock at a depth of more than 60 inches
- Wake soils, which have hard bedrock within a depth of 20 inches

Typical Pedon

Wateree fine gravelly loamy sand in an area of Rion-Wateree-Wake complex, 2 to 10 percent slopes
(fig. 9); in Wilkes County, 1.5 miles south of Danburg on Euel Saggus Road, 250 feet east of the road; USGS topographic quadrangle, Tignall, GA (1955); lat. 33 degrees 50 minutes 44 seconds N. and long. 82 degrees 38 minutes 44 seconds W.

A—0 to 6 inches; brown (10YR 5/3) fine gravelly loamy sand; weak fine granular structure; very friable; many fine and very fine roots; 15 percent fine quartz pebbles; very strongly acid; clear wavy boundary.
E—6 to 9 inches; light yellowish brown (10YR 6/4) fine gravelly loamy sand; weak fine granular structure; very friable; many very fine and fine roots; 15 percent fine quartz pebbles; very strongly acid; clear wavy boundary.
Bw1—9 to 12 inches; light yellowish brown (10YR 6/4) fine gravelly sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; 20 percent fine quartz pebbles; very strongly acid; clear wavy boundary.
Bw2—12 to 25 inches; strong brown (7.5YR 5/6) fine gravelly sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; common fine strong brown (7.5YR 5/8) mottles; 20 percent fine quartz pebbles; very strongly acid; gradual wavy boundary.
Cr—25 to 43 inches; strong brown (7.5YR 5/6) weathered bedrock that crushes to fine gravelly coarse sandy loam; massive; friable; 30 percent fine quartz pebbles; very strongly acid; gradual wavy boundary.
R—43 inches; unweathered, multicolored porphyritic granite bedrock.

Range in Characteristics

Thickness of the solum: 14 to 30 inches
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to more than 60 inches
Content of rock fragments: 0 to 35 percent throughout the profile

Figure 9.—Typical profile of Wateree fine gravelly loamy sand in an area of Rion-Wateree-Wake complex, 2 to 10 percent slopes.

Reaction: Very strongly acid to moderately acid in the A and B horizons in unlimed areas; extremely acid to moderately acid in the C and Cr horizons

A or Ap horizon:
Thickness—2 to 9 inches
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 10YR, value of 4 to 6, and chroma of 3 or 4
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam in the fine-earth fraction

Bw horizon:
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 4 to 8

Mottles—none to common in shades of brown or yellow
Texture—coarse sandy loam, sandy loam, or fine sandy loam in the fine-earth fraction; thin layers of loamy sand or sandy clay loam in some pedons

C horizon (if it occurs):
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 5 or 6, and chroma of 6 or 8
Mottles—few to many in shades of brown, yellow, white, or black
Texture—saprolite that crushes to sand, loamy sand, coarse sandy loam, or sandy loam in the fine-earth fraction

Cr horizon:
Color—multicolored
Texture—weathered bedrock

R layer:
Color—multicolored
Texture—unweathered bedrock

Wedowee Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from acid crystalline rocks
Landform: Hills
Slope range: 6 to 25 percent
Classification: Fine, kaolinitic, thermic Typic Kanhapludults

Geographically Associated Soils

- Appling soils, which have a solum that is 40 to more than 60 inches thick
- Ashlar soils, which do not have an argillic horizon and have hard bedrock at a depth of 20 to 40 inches
- Cecil soils, which have a dominantly red subsoil and have a solum that is 40 to more than 60 inches thick
- Helena soils, which are moderately well drained
- Madison soils, which have a dominantly red subsoil and contain more mica than the Wedowee soils
- Pacolet soils, which have hue of 2.5YR or redder
- Rion soils, which have a fine-loamy particle-size control section
- Wake soils, which do not have an argillic horizon and have hard bedrock at a depth of less than 20 inches
- Wateree soils, which do not have an argillic horizon and have soft bedrock at a depth of 20 to 40 inches

Typical Pedon

Wedowee sandy loam, 6 to 10 percent slopes (fig. 10); in Wilkes County, 4 miles west of Washington on Skull Shoals Road, 0.9 mile southeast on a paved county road, 3,100 feet southwest in a pasture; USGS topographic quadrangle, Washington West, GA (1972); lat. 33 degrees 42 minutes 18 seconds N. and long. 82 degrees 49 minutes 52 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine and common medium roots; strongly acid; abrupt smooth boundary.
BE—7 to 11 inches; brownish yellow (10YR 6/6) sandy clay loam; weak fine

Figure 10.—Typical profile of Wedowee sandy loam, 6 to 10 percent slopes.

subangular blocky structure; very friable; common fine roots; strongly acid; clear smooth boundary.

Bt1—11 to 22 inches; strong brown (7.5YR 5/6) sandy clay; moderate fine subangular blocky structure; firm; common fine roots; few prominent clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—22 to 28 inches; yellowish brown (10YR 5/8) sandy clay; common medium yellowish red (5YR 5/8) and common medium reddish yellow (7.5YR 6/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; many distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

BC—28 to 37 inches; strong brown (7.5YR 5/6) sandy clay loam; common medium red (2.5YR 5/8) and few medium pink (7.5YR 7/4) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

C1—37 to 50 inches; reddish yellow (7.5YR 6/6) saprolite that crushes to loam; many coarse yellowish red (5YR 5/6) and many medium pink (7.5YR 7/4) mottles; massive; friable; very strongly acid; gradual smooth boundary.

C2—50 to 60 inches; reddish yellow (7.5YR 6/8) saprolite that crushes to loam; many coarse yellowish red (5YR 5/8) and many coarse pink (7.5YR 7/4) mottles; massive; friable; very strongly acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches

Content of flakes of mica: None or few in the A and E horizons and the upper part of the B horizon; none to common in the lower part of the B horizon and in the C horizon
Content of rock fragments: 0 to 35 percent throughout the profile
Reaction: Extremely acid to strongly acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—2 to 5 inches
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 3 to 6
Texture—coarse sandy loam or sandy loam

BE horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 6
Texture—sandy loam, loam, or sandy clay loam

Bt horizon:
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 6 to 8
Mottles—few to many in shades of red, brown, pink, or yellow in the lower part of the horizon
Texture—clay loam, sandy clay, or clay

BC horizon:
Color—hue of 5YR, 7.5YR, or 10YR, value of 5 or 6, and chroma of 4 to 8
Mottles—few to many in shades of red, brown, pink, or yellow
Texture—loam, sandy clay loam, or clay loam

C horizon:
Color—multicolored
Texture—weathered loamy saprolite

Wehadkee Series

Depth class: Very deep to bedrock
Drainage class: Poorly drained
Permeability: Moderate
Parent material: Loamy alluvial sediments
Landform: Flood plains
Slope range: 0 to 2 percent
Classification: Fine-loamy, mixed, semiactive, nonacid, thermic Typic Fluvaquents

Geographically Associated Soils

- Cartecay soils, which have a coarse-loamy particle-size control section and are somewhat poorly drained
- Chewacla soils, which are somewhat poorly drained
- Fork soils, which have an argillic horizon, have base saturation greater than 35 percent, are somewhat poorly drained, and are on low stream terraces
- Roanoke soils, which have an argillic horizon and a clayey particle-size control section
- Shellbluff soils, which have a fine-silty particle-size control section and are moderately well drained
- Toccoa soils, which have a coarse-loamy particle-size control section and are moderately well drained

Typical Pedon

Wehadkee loam, ponded; in Wilkes County, 1.9 miles east of Sandtown, 500 feet west of a county road, 300 feet west of the confluence of Riley Branch and Morris Creek; USGS topographic quadrangle, Tignall, GA (1955); lat. 33 degrees 50 minutes 02 seconds N. and long. 82 degrees 39 minutes 17 seconds W.

A—0 to 6 inches; dark brown (10YR 3/3) loam; moderate coarse granular structure; friable; many fine, medium, and coarse roots; few fine flakes of mica; moderately acid; abrupt smooth boundary.

Bg1—6 to 18 inches; gray (10YR 5/1) loam; weak medium subangular blocky structure; friable; many fine and medium roots; many fine flakes of mica; moderately acid; gradual smooth boundary.

Bg2—18 to 30 inches; grayish brown (10YR 5/2) clay loam; weak medium subangular blocky structure; friable; common very fine and medium and many fine roots; many fine flakes of mica; moderately acid; abrupt smooth boundary.

Cg—30 to 65 inches; gray (10YR 6/1) sandy loam; massive; friable; few very fine and fine roots; thin strata of loam and clay loam; many fine flakes of mica; moderately acid.

Range in Characteristics

Thickness of the solum: 20 to more than 60 inches
Depth to bedrock: More than 60 inches
Content of flakes of mica: Few to many throughout the profile
Content of rock fragments: 0 to 5 percent in the A and B horizons; 0 to 15 percent in the C horizon
Reaction: Very strongly acid to slightly acid throughout the profile, but moderately acid to neutral in some part of the 10- to 40-inch control section
Other characteristics: An Ab horizon, which has the same ranges in color and texture as the A horizon, occurring in many pedons

A or Ap horizon:
Thickness—6 to 12 inches
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 4
Texture—loam; recent layers of overwash, which are as much as 20 inches thick, are loamy, and are variable in color, occur in some pedons

Bg horizon:
Color—hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

Cg horizon:
Color—hue of 10YR, 2.5Y, or 5Y, value of 4 to 7, and chroma of 1 or 2
Iron accumulations—few to many in shades of red, brown, or yellow
Texture—sandy loam or loam; stratified layers of coarser or finer textured material in some pedons; sandy textures only occurring below a depth of 40 inches

Wickham Series

Depth class: Very deep to bedrock
Drainage class: Well drained
Permeability: Moderate
Parent material: Loamy fluvial sediments
Landform: High stream terraces

Slope range: 2 to 6 percent
Classification: Fine-loamy, mixed, semiactive, thermic Typic Hapludults

Geographically Associated Soils

- Altavista soils, which have a yellower subsoil than the Wickham soils, are moderately well drained, and are on low stream terraces
- Roanoke soils, which have a clayey particle-size control section, are poorly drained, and are on flood plains and low stream terraces
- Shellbluff soils, which do not have an argillic horizon, have a fine-silty particle-size control section, are moderately well drained, and are on flood plains
- Toccoa soils, which do not have an argillic horizon, have a coarse-loamy particle-size control section, are moderately well drained, and are on flood plains

Typical Pedon

Wickham sandy loam, 2 to 6 percent slopes; in Wilkes County, 1.7 miles north of Shiloh Church in the Broad community, 1.1 miles southwest of the confluence of the Broad River and Bertram Creek; USGS topographic quadrangle, Broad, GA (1955); lat. 33 degrees 58 minutes 43 seconds N. and long. 82 degrees 41 minutes 54 seconds W.

Ap—0 to 6 inches; brown (7.5YR 5/4) sandy loam; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—6 to 14 inches; strong brown (7.5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable; common fine and medium and few coarse roots; few distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—14 to 19 inches; yellowish red (5YR 5/6) sandy clay loam; common medium red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable; few coarse roots; few distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—19 to 34 inches; yellowish red (5YR 5/6) clay loam; common medium reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; friable; few coarse roots; few distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

BC—34 to 50 inches; yellowish red (5YR 5/6) sandy clay loam; common medium reddish yellow (7.5YR 6/8) mottles; weak fine subangular blocky structure; friable; few coarse roots; very strongly acid; gradual smooth boundary.

C—50 to 60 inches; brownish yellow (10YR 6/6) sandy clay loam; many coarse yellowish brown (10YR 5/6) and many coarse pale brown (10YR 6/3) mottles; massive; friable; very strongly acid.

Range in Characteristics

Thickness of the solum: 37 to 60 inches or more
Depth to bedrock: More than 60 inches
Content of flakes of mica: None to common in the A and Bt horizons; none to many in the BC and C horizons
Content of rock fragments: 0 to 5 percent in the solum; 0 to 15 percent in the C horizon
Reaction: Very strongly acid to moderately acid throughout the profile in unlimed areas

A or Ap horizon:
Thickness—3 to 9 inches
Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 2 to 6

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—sandy loam or loam

Bt horizon:
Color—hue of 2.5YR, 5YR, or 7.5YR, value of 4 to 6, and chroma of 4 to 8; at least one subhorizon has hue of 5YR or 2.5YR
Mottles—none to common in shades of red, brown, and yellow in the lower part of the horizon
Texture—loam, sandy clay loam, or clay loam

BC horizon:
Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 3 to 8
Mottles—few to many in shades of red, brown, or yellow
Texture—sandy loam, loam, sandy clay loam, or clay loam

C horizon:
Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 3 to 8
Mottles—few to many in shades of red, brown, or yellow
Texture—sand, loamy sand, sandy loam, loam, or sandy clay loam

Wilkes Series

Depth class: Shallow to bedrock
Drainage class: Well drained
Permeability: Moderately slow
Parent material: Residuum weathered from intermediate and mafic crystalline rocks
Landform: Hills
Slope range: 10 to 40 percent
Classification: Loamy, mixed, active, thermic, shallow Typic Hapludalfs

Geographically Associated Soils

- Badin soils, which have base saturation of less than 35 percent, have soft bedrock at a depth of 20 to 40 inches, and formed in residuum weathered from Carolina Slates
- Enon and Mecklenburg soils, which have bedrock at a depth of more than 60 inches
- Georgeville soils, which have base saturation of less than 35 percent, have bedrock at a depth of more than 60 inches, and formed in residuum weathered from Carolina Slates and other fine grained rocks
- Zion soils, which have hard bedrock at a depth of 20 to 40 inches

Typical Pedon

Wilkes gravelly loam, 10 to 40 percent slopes, very stony (fig. 11); in Wilkes County, 1.2 miles southwest of the intersection of a dirt road and Georgia Highway 17 in the Norman community, 140 feet south of the dirt road; USGS topographic quadrangle, Jacksons Crossroads, GA (1970); lat. 33 degrees 55 minutes 04 seconds N. and long. 82 degrees 46 minutes 58 seconds W.

A—0 to 2 inches; very dark grayish brown (2.5Y 3/2) very stony loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; common medium manganese concretions; 20 percent stones, 10 percent cobbles, and 10 percent pebbles; slightly acid; clear smooth boundary.
E—2 to 7 inches; brown (10YR 5/3) very stony loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; common medium manganese concretions; 20 percent stones, 10 percent cobbles, and 10 percent pebbles; moderately acid; clear smooth boundary.
Bt—7 to 13 inches; yellowish brown (10YR 5/4) stony sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky and moderately plastic; common fine and medium roots; few distinct clay films on faces of peds; common medium

Figure 11.—Typical profile of Wilkes gravelly loam, 10 to 40 percent slopes, very stony.

manganese concretions; 15 percent stones, 10 percent cobbles, and 5 percent pebbles; moderately acid; gradual smooth boundary.

C—13 to 17 inches; yellowish brown (10YR 5/4) saprolite that crushes to gravelly loam; massive; very friable, slightly sticky and slightly plastic; few fine and medium roots; 15 percent stones, 10 percent cobbles, and 5 percent gravel; moderately acid; smooth wavy boundary.

Cr—17 inches; weathered, fractured mafic rock.

Range in Characteristics

Thickness of the solum: 10 to 20 inches

Depth to soft bedrock: 10 to 20 inches

Depth to hard bedrock: 40 to more than 60 inches

Content of rock fragments: 0 to 50 percent in the A and E horizons; 0 to 35 percent in the B and C horizons

Content of manganese concretions: None to common throughout the profile

Reaction: Strongly acid to slightly acid in the upper part of the profile; moderately acid to slightly alkaline in the lower part

A horizon:
Thickness—2 to 6 inches
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 3 to 5, and chroma of 2 to 4

E horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4
Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

Bt horizon:
Color—hue of 5YR, 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 4 to 8
Mottles or streaks of partially weathered primary minerals—few or common in shades of red, brown, yellow, black, green, gray, or white
Texture—loam, sandy clay loam, clay loam, or clay in the fine-earth fraction

C horizon (if it occurs):
Color—multicolored
Texture—loamy saprolite

Cr horizon:
Color—multicolored
Texture—weathered, fractured intermediate or mafic crystalline rock

Zion Series

Depth class: Moderately deep to bedrock
Drainage class: Well drained
Permeability: Slow or moderately slow
Parent material: Residuum weathered from mafic metamorphic rocks
Landform: Hills
Slope range: 2 to 25 percent
Classification: Fine, mixed, active, thermic Ultic Hapludalfs

Geographically Associated Soils

- Badin soils, which have base saturation of less than 35 percent and formed in residuum weathered from Carolina Slates
- Enon and Mecklenburg soils, which have bedrock at a depth of more than 60 inches
- Georgeville and Herndon soils, which have base saturation of less than 35 percent, have bedrock at a depth of more than 60 inches, and formed in residuum weathered from Carolina Slates
- Helena soils, which have base saturation of less than 35 percent, have bedrock at a depth of more than 60 inches, and are moderately well drained
- Wilkes soils, which have soft bedrock at a depth of 10 to 20 inches and hard bedrock at a depth of 40 to more than 60 inches

Typical Pedon

Zion silt loam, 2 to 10 percent slopes; in Wilkes County, 1 mile southeast of Metasville on Oak Grove Road, 1.4 miles east on Saggus Road, 20 feet southwest of the road; USGS topographic quadrangle, Metasville, GA (1954); lat. 33 degrees 45 minutes 27 seconds N. and long. 82 degrees 34 minutes 25 seconds W.

Ap—0 to 3 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; common very fine, fine, and medium roots; few medium manganese concretions; moderately acid; clear smooth boundary.
E—3 to 10 inches; light yellowish brown (10YR 6/4) silt loam; weak fine granular structure; very friable; common very fine and medium roots; common medium manganese concretions; strongly acid; clear smooth boundary.

Bt—10 to 22 inches; yellowish red (5YR 5/6) clay; strong medium subangular blocky structure; very firm, moderately sticky and very plastic; common medium roots; many prominent clay films on faces of peds; few fine and medium manganese concretions; slightly acid; abrupt wavy boundary.

C—22 to 24 inches; brown (7.5YR 5/4) saprolite that crushes to loam; many coarse reddish yellow (7.5YR 7/6) mottles; massive; friable, slightly sticky and moderately plastic; few fine roots; 10 percent pebbles; neutral; abrupt wavy boundary.

Cr—24 to 35 inches; multicolored, weathered mafic rock; cracks filled with grayish green gravelly loam; slightly sticky and slightly plastic; neutral; gradual smooth boundary.

R—35 inches; unweathered mafic metamorphic rock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches

Depth to hard bedrock: 20 to 40 inches

Content of rock fragments: 0 to 35 percent in the A and E horizons; 0 to 15 percent in the Bt horizon; 5 to 40 percent in the BC and C horizons

Content of manganese concretions: Few to many in the A, E, and B horizons

Reaction: Very strongly acid to moderately acid in the A and E horizons and the upper part of the B horizon; strongly acid to neutral in the lower part of the B horizon and in the C horizon

A or Ap horizon:

Thickness—1 to 6 inches
Color—hue of 7.5YR, 10YR, or 2.5Y, value of 3 to 5, and chroma of 2 or 3

E horizon (if it occurs):

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 3 to 6
Texture—fine sandy loam, loam, or silt loam

BA or BE horizon (if it occurs):

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture—loam, silt loam, or clay loam

Bt horizon:

Color—horizon has hue of 5YR, 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 4 to 8 or is multicolored
Texture—clay loam, silty clay, or clay

BC horizon (if it occurs):

Color—horizon has hue of 5YR, 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 4 to 8 or is multicolored
Texture—loam, sandy clay loam, or clay loam

C horizon (if it occurs):

Color—multicolored
Texture—loamy saprolite

Cr horizon:

Color—multicolored
Texture—weathered mafic rock

R layer:

Color—multicolored
Texture—unweathered mafic rock

Formation of the Soils

This section describes the factors of soil formation and relates them to the soils in the survey area. It also discusses the geology of the survey area and the processes of horizon differentiation.

Factors of Soil Formation

Soil characteristics are determined by the physical and mineralogical composition of the parent material; the plants and animals living on and in the soil; the climate under which the parent material accumulated and has existed since accumulation; the relief, or lay of the land; and the length of time that the forces of soil formation have acted on the soil material *(5)*. All of these factors influence every soil, but the significance of each factor varies from place to place. In one area, one factor may dominate soil formation; in another area, a different factor may dominate.

The interrelationships among these five factors are complex, and the effects of any one factor cannot be isolated and completely evaluated. It is convenient, however, to describe each factor separately and to indicate the probable effects of each.

Parent Material

The two broad classes of parent material in Lincoln and Wilkes Counties are residual material and transported material. Residual material has weathered in place from the underlying bedrock. Soils that formed in residual material have morphological, chemical, and textural characteristics directly related to the underlying bedrock. The transported material—either alluvium (material carried by water) or colluvium (material moved by gravity)—was then laid down as unconsolidated deposits of clay, silt, sand, gravel, and rock fragments. Characteristics of the transported material are related to the characteristics of the soils or rocks from which the material has washed or moved.

The rocks of the survey area are mainly granite, gneiss, schist, metadacite, Carolina Slates, gabbro, and diorite.

Soils that formed in material weathered from granite have a surface layer of sand or sandy loam. Ashlar, Helena, Pacolet, Rion, Wake, and Wateree soils are examples.

Gneiss is not so hard or dense as granite and therefore weathers more readily. Schist is micaceous, relatively soft, and deeply weathered. Soils that formed from parent materials of gneiss and schist have a surface layer of sandy loam or loam. Appling, Cecil, Lloyd, Madison, Pacolet, and Wedowee soils are examples.

Carolina Slates are fine textured, are relatively hard, and weather slowly. Soils that formed in material weathered from Carolina Slates have a surface layer of very fine sandy loam or silt loam. Badin, Georgeville, Herndon, and Pageland soils are examples.

Gabbro and diorite are fine textured, are hard, and weather slowly. Soils that formed in material weathered from gabbro and diorite have a surface layer of sandy loam, fine sandy loam, loam, or silt loam. They have a firm, sticky and plastic subsoil. Enon, Mecklenburg, Wilkes, and Zion soils are examples.

Soils that formed in transported alluvial material on first and second bottoms of flood plains are weakly developed and still receive deposits during floods. Cartecay, Chewacla, Shellbluff, Toccoa, and Wehadkee soils formed in recent alluvium.

High stream terraces occur near some of the larger streams and rivers in Lincoln and Wilkes Counties. The well developed soils on these terraces formed in alluvium that is older than the alluvium on adjacent, lower flood plains. Altavista and Wickham soils are examples of soils that formed in alluvium on high stream terraces.

Living Organisms

Trees, shrubs, grasses, micro-organisms, worms, and other forms of plant and animal life are factors in the formation of soils. The environmental factors—parent material, climate, relief, and time—determine the kinds of plants and animals that live on and in the soil.

Plants supply organic matter to the soil. They transfer moisture and plant nutrients from the lower horizons to the upper horizons. Organic matter decomposes and is mixed into the soil by the action of micro-organisms and worms or by chemical reaction. The rate at which organic matter decomposes is influenced by temperature, moisture, the population of bacteria, fungi, and other micro-organisms, and the content of organic matter. In Lincoln and Wilkes Counties organic matter has not accumulated to a large extent.

Since the development of farming, humans have become a soil-forming factor. They affect the soil-forming processes by clearing forests and cultivating the land. Cultivation removes deep-rooted plants, mixes the upper horizons of the soil, causes erosion, adds chemicals, and changes fertility levels.

Bacteria, fungi, and other micro-organisms accelerate the weathering of rock, the decomposition of organic matter, and the rate at which nutrients are released for plant growth. They assimilate and transform chemicals in the soil. Most of the bacteria, fungi, and other micro-organisms occur in the upper few inches of the soil.

Climate

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil.

Water dissolves minerals, supports chemical and biological activity, and transports mineral and organic residue through the soil. The amount of water that percolates through the soil depends on rainfall, humidity, the frost-free period, landscape position, slope, and soil texture and permeability. Rainwater promotes the leaching of soluble bases and the translocation of less soluble and colloidal material downward through the soil.

Temperature influences the kinds and growth of living organisms and the speed of physical and chemical reactions in the soil.

Relief

Relief is the relative difference in elevation between the upland summits and the lowlands or valleys of a given region. Relief affects the formation of soils by causing differences in internal drainage, runoff, geologic erosion, and plant cover. It can alter the effects of parent material on the formation of soils to the extent that several different kinds of soil may form from the same kind of parent material.

In Lincoln and Wilkes Counties, relief ranges from nearly level to steep. Most of the soils on uplands that have slopes of less than 15 percent have a thick, well developed profile. Cecil, Georgeville, Lloyd, and Mecklenburg soils are examples. On steep slopes, geologic erosion removes soil material almost as fast as it accumulates and

shallow soils, such as Wake and Wilkes soils, form. In nearly level areas where soil wetness hinders good aeration, poorly drained soils form. Wehadkee and Roanoke soils are examples.

Time

Time is an important factor in the alteration of parent material and is necessary for the development of distinct genetic horizons in the soil profile. Mature soils, such as Cecil soils, have well defined genetic horizons. These soils are considered to be in equilibrium with their environment. Immature soils, such as Toccoa soils on flood plains, have little or no development of genetic horizons because soil material is constantly being added to them during periods of flooding and the material has not been in place long enough for soil horizons to develop.

Processes of Horizon Differentiation

One or more soil-forming processes are involved in the formation of soil horizons. These processes are the accumulation of organic matter; the leaching of carbonates and other soluble material; the chemical weathering, mainly by hydrolysis, of primary minerals into silicate clay minerals; the translocation of silicate clay and some silt-sized particles from one horizon to another; and the reduction and transfer of iron.

These processes have been active in the formation of most of the soils in Lincoln and Wilkes Counties. The interaction of the first four processes is indicated by the strongly expressed horizons in Cecil and Mecklenburg soils. All five processes have probably been active in the formation of the moderately well drained Altavista and Helena soils.

Some organic matter has accumulated in all of the soils in the survey area. Most of the soils contain moderate amounts of organic matter in the surface layer. The content of organic matter ranges from low, as in Georgeville soils, to high, as in Wehadkee soils.

The translocation of clay minerals is an important process in the development of many soils in the survey area. As clay minerals are removed from the A horizon, they accumulate as clay films on the faces of peds, in pores, and in root channels in the B horizon.

As silicate clay forms from primary minerals, some iron is commonly released as hydrated oxides. These oxides are generally red. Even if they occur in small amounts, they give the soil material a brownish color. They are largely responsible for the strong brown, yellowish brown, or reddish brown colors that are dominant in the subsoil of many soils in the survey area.

The reduction and transfer of iron have occurred in all of the soils that are not characterized by good natural drainage. This process, known as gleying, is evidenced by a gray matrix color and by iron or clay depletions. Some of the iron may be reoxidized and segregated and thus form yellow, brown, red, or other brightly colored masses of iron accumulation in an essentially gray matrix in the subsoil. Nodules or concretions of iron or manganese also commonly form as a result of this process. Soil features associated with chemically reduced iron are referred to as redoximorphic features *(11)*.

Geology and Soils

Lincoln and Wilkes Counties are located in the Washington Slope Physiographic Province of the Southern Piedmont Major Land Resource Area (MLRA). The surface is gently undulating at elevations of 400 to 650 feet. The area is marked by broad, shallow valleys separating long, gentle slopes that rise to rounded stream divides.

Relief generally ranges from 50 to 200 feet. Elevations range from 330 feet at Clarks Hill Reservoir to almost 900 feet on Graves Mountain.

The bedrock of the area consists of igneous and metamorphic crystalline rock. During the Precambrian Age (more than 800 million years ago), the area was covered by a shallow sea. About 600 million years ago, a series of volcanoes erupted, spewing ash layers. These sediments were consolidated into the present-day metamorphic rocks called Carolina Slates. Around 300 million years ago, igneous granite domes rose through the slates. Around 200 million years ago, the slates and granites cracked and the crevices were filled with mafic rock. The mafic rock interlaces the survey area.

In Lincoln County, the southern part of the county has a general geology of Carolina Slates and the northern part has granitic gneisses, schists, and porphyritic and undifferentiated granites. These two areas are separated by a band of metadacite which occurs in the central part of the county around Lincolnton, continuing northeast to the South Carolina border. Small pockets of mafic rocks are scattered throughout the county, and the area is dissected by narrow flood plains.

In Wilkes County, Carolina Slates occur in the southeastern and north-central parts of the county. These two areas are separated by a wide region of granitic gneisses, schists, and porphyritic and undifferentiated granites. Small pockets of mafic rocks are scattered throughout the county, and the area is dissected by narrow flood plains.

The general soil map can be used as an approximate guide to the geology of the survey area. Carolina Slates are dominant in the Georgeville-Herndon-Badin general soil map unit. Undifferentiated granites, granitic gneisses, and schists are dominant in the Cecil-Pacolet-Madison general soil map unit. Porphyritic granite is dominant in the Pacolet-Rion-Ashlar general soil map unit. Metadacite is dominant in the Wedowee-Appling-Helena general soil map unit. Mafic rocks are dominant in the Mecklenburg-Zion-Enon general soil map unit. Quaternary alluvial deposits cover the flood plains and stream terraces of most major stream valleys. These areas are dominant in the Toccoa-Cartecay-Shellbluff general soil map unit.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces. Generally, cool aspects are north- to east-facing and warm aspects are south- to west-facing.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Basic rock. An igneous rock composed dominantly of dark minerals. The minerals of this rock are comparatively low in silica and rich in bases, such as amphiboles, pyroxenes, biotite, and olivine.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Borrow pit. An open excavation from which the soil and underlying material have been removed, generally for use in road construction. Borrow pits support few or no plants without major reclamation. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clayey. A general textural term that includes sandy clay, silty clay, and clay. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) containing 35 percent or more clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth class. Refers to the depth to a root-restricting layer. Unless otherwise stated, this layer is understood to be consolidated bedrock. The depth classes in this survey are:

Very shallow	less than 10 inches
Shallow	10 to 20 inches
Moderately deep	20 to 40 inches
Deep	40 to 60 inches
Very deep	more than 60 inches

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Dike. A long, narrow cross-cutting mass of igneous rock that extends to or crops out on the land surface.

Diorite. A coarse grained igneous rock with the composition of andesite (no quartz or orthoclase). It is composed of about 75 percent plagioclase feldspars with the balance being ferromagnesian silicates.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Eroded (soil phase). Because of erosion, the soil has lost an average of 25 to 75 percent of the original A horizon or the uppermost 2 to 6 inches if the original A horizon was less than 8 inches thick.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion classes. Classes based on estimates of past erosion. The classes are as follows:

Class 1.—Soils that have lost some of the original A horizon but on the average less than 25 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most areas, the thickness of the surface layer is within the normal range of variability of the uneroded soil. Class 1 erosion typically is not designated in the name of the map unit or in the map symbol.

Class 2.—Soils that have lost an average of 25 to 75 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most cultivated areas of class 2 erosion, the surface

layer consists of a mixture of the original A horizon and material from below. Some areas may have intricate patterns ranging from uneroded spots to spots where all of the original A horizon has been removed.

Class 3.—Soils that have lost an average of 75 percent or more of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). In most cultivated areas of class 3 erosion, material that was below the original A horizon is exposed. The plow layer consists entirely or largely of this material.

Class 4.—Soils that have lost all of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick) plus some or all of the deeper horizons throughout most of the area. The original soil can be identified only in spots. Some areas may be smooth, but most have an intricate pattern of gullies.

Erosion hazard. A term describing the potential for future erosion, inherent in the soil itself, in inadequately protected areas. The following definitions are based on estimated annual soil loss in metric tons per hectare (values determined by the Universal Soil Loss Equation assuming bare soil conditions and using rainfall and climate factors for Georgia):

0 tons per hectare	none
Less than 2.5 tons per hectare	slight
2.5 to 10 tons per hectare	moderate
10 to 25 tons per hectare	severe
More than 25 tons per hectare	very severe

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Exposed material is hard or soft bedrock. Areas identified on the detailed soil maps by a special symbol typically are long, narrow bands that are less than 2 acres in size. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fast intake (in tables). The rapid movement of water into the soil.

Felsic rock. A general term for light-colored igneous rock and some metamorphic crystalline rock that have an abundance of quartz, feldspars, feldspathoids, and muscovite mica.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of the soil surface by flowing water from any source, such as overflowing streams, runoff from adjacent or surrounding slopes, and inflow from high tides. The frequency of flooding generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather

conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). The duration of flooding is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month).

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Gneiss. A coarse grained metamorphic rock in which bands rich in granular minerals alternate with bands that are predominantly schistose minerals. It is commonly formed by the metamorphism of granite.

Granite. A coarse grained igneous rock dominated by light-colored minerals, consisting of about 50 percent orthoclase and 25 percent quartz with the balance being plagioclase feldspars and ferromagnesian silicates. Granites and granodiorites comprise 95 percent of all intrusive rocks.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot. An area of soils where the content of rock fragments generally less than 3 inches in diameter is more than 15 percent, by volume, in the surface layer, occurring in a map unit in which the surface layer of the dominant soil or soils has less than 15 percent gravel. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Gravel pit. An open excavation in which the soil and underlying material are used as a source of sand and gravel. The excavated material is not crushed for use. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A very small channel with steep sides cut by running water and through which water ordinarily runs only after rainfall, icemelt, or snowmelt. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

High-grade metamorphic rocks. Highly metamorphosed rocks, such as gneiss and schist.

High water table (seasonal). The highest level of a saturated zone in the soil (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above the surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Hornblende. A rock-forming ferromagnesian silicate mineral of the amphibole group.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intermediate rock. Igneous or metamorphic crystalline rock that is intermediate in composition between mafic and felsic rock.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones that have a low content of iron and manganese oxide because of chemical reduction and removal but also have a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy. A general textural term that includes coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, clay loam, and sandy clay loam. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of loamy very fine sand or finer textured material that contains more than 15 percent fine sand or coarser sand and less than 35 percent clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Low stream terrace. A terrace in an area that floods, commonly 3 to 10 feet higher in elevation than the adjacent flood plain.

Low strength. The soil is not strong enough to support loads.

Mafic rock. A dark rock composed predominantly of magnesium silicates. It can contain small amounts of quartz, feldspar, or muscovite mica.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mine or quarry (map symbol). An open excavation from which the soil and underlying material have been removed, exposing bedrock; or the surface opening to underground mines. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau), and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

No-till planting. A method of planting crops in which there is virtually no seedbed preparation. A thin slice of the soil is opened, and the seed is planted at the desired depth.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Perennial stream. A stream, or reach of a stream, that flows continuously throughout the year.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch

Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piedmont. The physiographic region of northern and central Georgia characterized by rolling landscapes formed from the weathering of residual rock material.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass having a relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate weather conditions and soil moisture conditions and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. They indicate chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. They indicate the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation. Descriptive terms for concentrations and

depletions are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. An area of exposed bedrock in a map unit that has less than 0.1 percent exposed bedrock. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Runoff class (surface). Refers to the rate at which water flows away from the soil over the surface without infiltrating. Six classes of rate of runoff are recognized:

Ponded.—Little of the precipitation and water that runs onto the soil escapes as runoff, and free water stands on the surface for significant periods. The amount of water that is removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs on level and nearly level soils in depressions. The water depth may fluctuate greatly.

Very slow.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils are commonly level or nearly level or are very porous.

Slow.—Surface water flows away so slowly that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils are nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

Medium.—Surface water flows away so rapidly that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils are nearly level or gently sloping and absorb precipitation at a moderate rate, or they are steeper but absorb water rapidly.

Rapid.—Surface water flows away so rapidly that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep and have moderate or slow rates of absorption.

Very rapid.—Surface water flows away so rapidly that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep and absorb precipitation slowly.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a

soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy. A general textural term that includes coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of sand or loamy sand that contains less than 50 percent very fine sand, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope. An area of soils that are at least two slope classes steeper than the named soils in the surrounding map unit. Areas identified on the detailed soil maps by a special symbol typically are long, narrow bands that are less than 2 acres in size. (See Slope.)

Shoulder. The landscape position, parallel to the summit, that is directly below the ridgetop and directly above the side slope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. The landscape position that is directly below the shoulder and directly above the toe slope. It makes up most of the mountainside or hillside.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level .... 0 to 2 percent
Gently sloping .... 2 to 6 percent
Sloping .... 6 to 10 percent
Strongly sloping .... 10 to 15 percent

Moderately steep	15 to 25 percent
Steep	25 to 40 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil map unit. A kind of soil or miscellaneous area or a combination of two or more soils or one or more soils and one or more miscellaneous areas that can be shown at the scale of mapping for the defined purposes and objectives of the soil survey. Soil map units generally are designed to reflect significant differences in use and management among the soils of a survey area.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Soil strength. The load-supporting capacity of a soil at specific moisture and density conditions.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot. An area where 0.01 to 0.1 percent of the surface is covered by rock fragments larger than 10 inches in diameter. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Suitability ratings. Ratings for the degree of suitability of soils for pasture, crops, woodland, and engineering uses. The ratings and the general criteria used for their selection are as follows:

Well suited.—The intended use may be initiated and maintained by using only the standard materials and methods typically required for that use. Good results can be expected.

Suited or moderately suited.—The limitations affecting the intended use make special planning, design, or maintenance necessary.

Poorly suited.—The intended use is difficult or costly to initiate and maintain because of certain soil properties, such as steep slopes, a severe hazard of erosion, a high water table, low fertility, and a hazard of flooding. Major soil reclamation, special design, or intensive management practices are needed.

Very poorly suited, not suited, or unsuited.—The intended use is very difficult or costly to initiate and maintain, and thus it generally should not be undertaken.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.” The textural classes are defined as follows:

Sands (coarse sand, sand, fine sand, and very fine sand).—Soil material in which the content of sand is 85 percent or more and the percentage of silt plus $1\frac{1}{2}$ times the percentage of clay does not exceed 15.

Loamy sands (loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand).—Soil material in which, at the upper limit, the content of sand is 85 to 90 percent and the percentage of silt plus $1\frac{1}{2}$ times the percentage of clay is not less than 15; at the lower limit, the content of sand is 70 to 85 percent and the percentage of silt plus twice the percentage of clay does not exceed 30.

Sandy loams (coarse sandy loam, sandy loam, fine sandy loam, and very fine sandy loam).—Soil material in which the content of clay is 20 percent or less, the percentage of silt plus twice the percentage of clay exceeds 30, and the content of sand is 52 percent or more or soil material in which the content of clay is less than 7 percent, the content of silt is less than 50 percent, and the content of sand is 43 to 52 percent.

Loam.—Soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Silt loam.—Soil material that contains 50 percent or more silt and 12 to 27 percent clay or 50 to 80 percent silt and less than 12 percent clay.

Silt.—Soil material that contains 80 percent or more silt and less than 12 percent clay.
Sandy clay loam.—Soil material that contains 20 to 35 percent clay, less than 28 percent silt, and 45 percent or more sand.
Clay loam.—Soil material that contains 27 to 40 percent clay and 20 to 45 percent sand.
Silty clay loam.—Soil material that contains 27 to 40 percent clay and less than 20 percent sand.
Sandy clay.—Soil material that contains 35 percent or more clay and 45 percent or more sand.
Silty clay.—Soil material that contains 40 percent or more clay and 40 percent or more silt.
Clay.—Soil material that contains 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Underlying material. Technically the C horizon; the part of the soil below the biologically altered A and B horizons.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water table (apparent). A thick zone of free water in the soil. The apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table (perched). A saturated zone of water in the soil standing above an unsaturated zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Wet spot. An area of somewhat poorly drained to very poorly drained soils that are at least two drainage classes wetter than the named soils in the surrounding map unit. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size. (See Drainage class.)

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1961-90 at Washington, Georgia)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	52.4	29.3	40.9	74	6	29	5.03	2.98	6.87	7	0.0
February----	57.1	31.5	44.3	78	12	46	4.39	2.49	6.07	6	.1
March-------	65.6	38.9	52.3	84	20	150	4.94	2.91	6.74	7	.0
April-------	73.8	46.7	60.3	89	29	318	4.01	1.80	5.90	6	.0
May---------	81.0	55.2	68.1	93	38	560	4.14	2.24	5.81	5	.0
June--------	86.9	63.1	75.0	98	48	749	4.10	2.15	5.80	6	.0
July--------	89.8	67.0	78.4	100	57	880	4.81	2.41	6.89	7	.0
August------	88.8	66.3	77.6	99	54	854	3.76	1.88	5.40	5	.0
September---	83.8	60.0	71.9	95	43	657	3.13	1.31	4.67	5	.0
October-----	74.6	47.8	61.2	89	29	355	3.15	1.26	5.13	4	.0
November----	65.7	39.5	52.6	82	20	145	3.21	1.77	4.48	5	.0
December----	55.9	32.3	44.1	76	12	49	4.10	2.20	5.77	7	.0
Yearly:											
Average---	72.9	48.1	60.5	---	---	---	---	---	---	---	---
Extreme---	106	-5	---	101	4	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,790	48.75	40.11	55.82	70	.1

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Washington, Georgia)

Probability	Temperature 24 °F or lower	Temperature 28 °F or lower	Temperature 32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 20	Apr. 5	Apr. 19
2 years in 10 later than--	Mar. 12	Mar. 28	Apr. 14
5 years in 10 later than--	Feb. 25	Mar. 14	Apr. 3
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 6	Oct. 25	Oct. 11
2 years in 10 earlier than--	Nov. 15	Nov. 1	Oct. 19
5 years in 10 earlier than--	Dec. 2	Nov. 12	Nov. 2

Table 3.—Growing Season

(Recorded in the period 1961-90 at Washington, Georgia)

Probability	Daily minimum temperature during growing season: Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	237	214	182
8 years in 10	252	223	192
5 years in 10	280	240	212
2 years in 10	308	257	232
1 year in 10	323	266	242

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Lincoln County	Wilkes County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
AkA	Altavista sandy loam, 0 to 2 percent slopes, rarely flooded	35	815	850	0.2
AmB	Appling sandy loam, 2 to 6 percent slopes	2,580	7,500	10,080	2.2
AmC	Appling sandy loam, 6 to 10 percent slopes	835	3,120	3,955	0.8
BaC	Badin silt loam, 2 to 10 percent slopes	3,630	610	4,240	0.9
BaE	Badin silt loam, 10 to 25 percent slopes	3,940	855	4,795	1.0
Ca	Cartecay loam, frequently flooded	1,640	4,375	6,015	1.3
CeB	Cecil sandy loam, 2 to 6 percent slopes	4,700	23,735	28,435	6.1
CeC	Cecil sandy loam, 6 to 10 percent slopes	1,970	7,670	9,640	2.1
CfC2	Cecil sandy clay loam, 6 to 10 percent slopes, eroded	4,435	18,210	22,645	4.8
CgC	Cecil-Urban land complex, 2 to 10 percent slopes	460	0	460	0.1
Ch	Chewacla loam, frequently flooded	1,175	2,830	4,005	0.9
Dp	Dumps-Pits complex	255	50	305	0.1
EnB	Enon fine sandy loam, 2 to 6 percent slopes	595	4,110	4,705	1.0
EnC	Enon fine sandy loam, 6 to 10 percent slopes	630	2,370	3,000	0.6
FrA	Fork silt loam, 0 to 2 percent slopes, occasionally flooded	65	555	620	0.1
GeB	Georgeville silt loam, 2 to 6 percent slopes	13,860	22,310	36,170	7.7
GeC	Georgeville silt loam, 6 to 10 percent slopes	5,595	1,030	6,625	1.4
GeE	Georgeville silt loam, 10 to 25 percent slopes	1,775	655	2,430	0.5
GoC2	Georgeville clay loam, 6 to 10 percent slopes, eroded	11,700	31,260	42,960	9.2
GoE2	Georgeville clay loam, 10 to 25 percent slopes, eroded	8,105	21,395	29,500	6.3
GuC	Georgeville-Urban land complex, 2 to 10 percent slopes	0	360	360	0.1
HeB	Helena sandy loam, 2 to 6 percent slopes	2,330	745	3,075	0.7
HeC	Helena sandy loam, 6 to 10 percent slopes	3,970	1,220	5,190	1.1
HeD	Helena sandy loam, 10 to 15 percent slopes	2,010	455	2,465	0.5
HnB	Herndon very fine sandy loam, 2 to 6 percent slopes	5,340	2,225	7,565	1.6
HnC	Herndon very fine sandy loam, 6 to 10 percent slopes	6,510	1,490	8,000	1.7
LdB	Lloyd loam, 2 to 6 percent slopes	940	2,410	3,350	0.7
LdC	Lloyd loam, 6 to 10 percent slopes	340	230	570	0.1
LeC2	Lloyd clay loam, 6 to 10 percent slopes, eroded	280	1,430	1,710	0.4
LeE2	Lloyd clay loam, 10 to 25 percent slopes, eroded	185	2,075	2,260	0.5
LxC	Lloyd-Urban land complex, 2 to 10 percent slopes	0	1,110	1,110	0.2
MaB	Madison sandy loam, 2 to 6 percent slopes	665	1,100	1,765	0.4
MaC	Madison sandy loam, 6 to 10 percent slopes	1,430	500	1,930	0.4
MaE	Madison sandy loam, 10 to 25 percent slopes	940	920	1,860	0.4
MdC2	Madison sandy clay loam, 6 to 10 percent slopes, eroded	80	2,085	2,165	0.5
MdE2	Madison sandy clay loam, 10 to 25 percent slopes, eroded	220	2,000	2,220	0.5
MkB	Mecklenburg sandy loam, 2 to 6 percent slopes	2,255	5,030	7,285	1.6
MkC	Mecklenburg sandy loam, 6 to 10 percent slopes	885	3,300	4,185	0.9
MkE	Mecklenburg sandy loam, 10 to 25 percent slopes	425	2,370	2,795	0.6
MnC2	Mecklenburg sandy clay loam, 6 to 10 percent slopes, eroded	1,750	4,625	6,375	1.4
MnE2	Mecklenburg sandy clay loam, 10 to 25 percent slopes, eroded	940	3,080	4,020	0.9
PaB	Pacolet fine gravelly loamy coarse sand, 2 to 6 percent slopes	2,380	5,265	7,645	1.6
PaC	Pacolet fine gravelly loamy coarse sand, 6 to 10 percent slopes	3,680	5,730	9,410	2.0
PaE	Pacolet fine gravelly loamy coarse sand, 10 to 25 percent slopes	1,105	3,700	4,805	1.0
PcB	Pacolet sandy loam, 2 to 6 percent slopes	505	6,740	7,245	1.5
PcC	Pacolet sandy loam, 6 to 10 percent slopes	935	4,410	5,345	1.1
PcE	Pacolet sandy loam, 10 to 25 percent slopes	1,165	290	1,455	0.3
PeC2	Pacolet sandy clay loam, 6 to 10 percent slopes, eroded	340	5,990	6,330	1.4
PeE2	Pacolet sandy clay loam, 10 to 25 percent slopes, eroded	4,690	16,175	20,865	4.5
PfE	Pacolet-Udorthents complex, 10 to 25 percent slopes	10	295	305	0.1
PgB	Pageland silt loam, 0 to 6 percent slopes	2,045	515	2,560	0.5
Pr	Pits, quarry	0	50	50	*
RaE	Rion-Ashlar-Wake complex, 10 to 25 percent slopes	2,580	3,170	5,750	1.2
ReC	Rion-Wateree-Wake complex, 2 to 10 percent slopes	915	1,525	2,440	0.5
Ro	Roanoke silt loam, occasionally flooded	35	535	570	0.1
Sh	Shellbluff silt loam, occasionally flooded	1,935	2,450	4,385	0.9

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Lincoln County	Wilkes County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
To	Toccoa loam, occasionally flooded	1,755	12,470	14,225	3.0
Ue	Udorthents, excavated	210	170	380	0.1
Ur	Udorthents, loamy	50	0	50	*
WeC	Wedowee sandy loam, 6 to 10 percent slopes	2,455	5,650	8,105	1.7
WeE	Wedowee sandy loam, 10 to 25 percent slopes	2,325	4,435	6,760	1.4
Wf	Wehadkee loam, ponded	690	2,625	3,315	0.7
WhB	Wickham sandy loam, 2 to 6 percent slopes	190	4,020	4,210	0.9
WkF	Wilkes gravelly loam, 10 to 40 percent slopes, very stony	695	2,280	2,975	0.6
ZnC	Zion silt loam, 2 to 10 percent slopes	2,025	4,430	6,455	1.4
ZnE	Zion silt loam, 10 to 25 percent slopes	3,200	3,970	7,170	1.5
	Water areas less than 40 acres in size	580	3,115	3,695	0.8
	Water areas greater than 40 acres in size	29,330	10,980	40,310	8.6
	Total	165,300	303,200	468,500	100.0

* Less than 0.1 percent.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Wheat	Cotton	Pasture
		Bu	Bu	Lbs	AUM*
AkA------------- Altavista	IIw	100	55	650	9.0
AmB------------- Appling	IIe	80	45	650	8.0
AmC------------- Appling	IIIe	70	35	600	7.5
BaC------------- Badin	IVe	65	40	---	6.0
BaE------------- Badin	VIe	---	---	---	4.5
Ca-------------- Cartecay	Vw	---	---	---	5.0
CeB------------- Cecil	IIe	75	40	600	8.0
CeC------------- Cecil	IIIe	65	35	550	7.5
CfC2------------ Cecil	IVe	50	30	500	6.0
CgC**:					
Cecil----------	IIIe	---	---	---	---
Urban land.					
Ch-------------- Chewacla	IVw	80	30	---	4.5
Dp**. Dumps-Pits					
EnB------------- Enon	IIIe	85	40	500	8.0
EnC------------- Enon	IVe	75	35	450	7.5
FrA------------- Fork	IIIw	100	45	---	6.0
GeB------------- Georgeville	IIe	80	40	650	7.5
GeC------------- Georgeville	IIIe	70	35	600	7.0
GeE------------- Georgeville	VIe	---	---	---	6.0

See footnotes at end of table.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Wheat	Cotton	Pasture
		Bu	Bu	Lbs	AUM*
GoC2------------ Georgeville	IVe	50	---	450	6.5
GoE2------------ Georgeville	VIIe	---	---	---	5.5
GuC**:					
Georgville-----	IIIe	---	---	---	---
Urban land.					
HeB------------- Helena	IIe	70	40	575	6.0
HeC------------- Helena	IIIe	60	35	475	5.5
HeD------------- Helena	IVe	50	---	---	4.5
HnB------------- Herndon	IIe	80	45	650	7.5
HnC------------- Herndon	IIIe	70	40	600	7.0
LdB------------- Lloyd	IIe	90	50	550	8.5
LdC------------- Lloyd	IIIe	80	45	500	8.0
LeC2------------ Lloyd	IVe	70	40	375	7.0
LeE2------------ Lloyd	VIe	---	---	---	6.0
LxC**.					
Lloyd----------	IIIe	---	---	---	---
Urban land.					
MaB------------- Madison	IIe	80	45	600	7.5
MaC------------- Madison	IIIe	70	40	550	7.0
MaE------------- Madison	VIe	---	---	---	5.5
MdC2------------ Madison	IVe	60	35	500	5.5
MdE2------------ Madison	VIIe	---	---	---	4.5
MkB------------- Mecklenburg	IIe	80	45	550	8.0

See footnotes at end of table.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Wheat	Cotton	Pasture
		Bu	Bu	Lbs	AUM*
MkC: Mecklenburg	IIIe	70	40	500	7.5
MkE: Mecklenburg	VIe	---	---	---	6.0
MnC2: Mecklenburg	IVe	55	30	---	7.0
MnE2: Mecklenburg	VIe	---	---	---	6.0
PaB: Pacolet	IIe	70	35	600	7.0
PaC: Pacolet	IIIe	60	30	550	6.5
PaE: Pacolet	VIe	---	---	---	5.0
PcB: Pacolet	IIe	80	40	700	8.0
PcC: Pacolet	IIIe	75	35	650	7.0
PcE: Pacolet	VIe	---	---	---	5.5
PeC2: Pacolet	IVe	50	30	500	6.5
PeE2: Pacolet	VIIe	---	---	---	5.0
PfE:					
Pacolet	VIIe	---	---	---	4.0
Udorthents.					
PgB: Pageland	IIIe	80	35	---	6.0
Pr**. Pits, quarry					
RaE:					
Rion	VIe	---	---	---	4.5
Ashlar	VIe	---	---	---	4.0
Wake	VIs	---	---	---	3.0
ReC:					
Rion	IIIe	70	35	550	5.5
Wateree	IVe	55	---	---	4.5
Wake	IVs	30	---	---	3.5

See footnotes at end of table.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Wheat	Cotton	Pasture
		Bu	Bu	Lbs	AUM*
Ro-------------- Roanoke	IVw	---	---	---	4.0
Sh-------------- Shellbluff	IIw	130	55	800	8.0
To-------------- Toccoa	IIw	85	45	700	7.0
Ue. Udorthents, excavated					
Ur. Udorthents, loamy					
WeC------------- Wedowee	IIIe	60	30	450	5.5
WeE------------- Wedowee	VIe	---	---	---	4.5
Wf-------------- Wehadkee	VIIw	---	---	---	---
WhB------------- Wickham	IIe	90	50	700	8.5
WkF------------- Wilkes	VIIs	---	---	---	---
ZnC------------- Zion	IIIe	60	30	---	5.0
ZnE------------- Zion	VIe	---	---	---	4.0

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 6.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland)

Map symbol	Soil name
AkA	Altavista sandy loam, 0 to 2 percent slopes, rarely flooded
AmB	Appling sandy loam, 2 to 6 percent slopes
CeB	Cecil sandy loam, 2 to 6 percent slopes
EnB	Enon fine sandy loam, 2 to 6 percent slopes
GeB	Georgeville silt loam, 2 to 6 percent slopes
HeB	Helena sandy loam, 2 to 6 percent slopes
HnB	Herndon very fine sandy loam, 2 to 6 percent slopes
LdB	Lloyd loam, 2 to 6 percent slopes
MaB	Madison sandy loam, 2 to 6 percent slopes
MkB	Mecklenburg sandy loam, 2 to 6 percent slopes
PaB	Pacolet fine gravelly loamy coarse sand, 2 to 6 percent slopes
PcB	Pacolet sandy loam, 2 to 6 percent slopes
PgB	Pageland silt loam, 0 to 6 percent slopes
Sh	Shellbluff silt loam, occasionally flooded
WhB	Wickham sandy loam, 2 to 6 percent slopes

Table 7.—Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
AkA---------------- Altavista	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	91	9	Loblolly pine, yellow-poplar, sweetgum.
							Sweetgum------------	84	6	
							Yellow-poplar-------	---	---	
AmB, AmC----------- Appling	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	84	8	Loblolly pine, yellow-poplar.
							White oak-----------	64	3	
							Yellow-poplar-------	88	6	
BaC---------------- Badin	8D	Slight	Slight	Slight	Moderate	Moderate	Loblolly pine-------	80	8	Loblolly pine.
							Shortleaf pine------	68	7	
							White oak-----------	63	3	
							Scarlet oak---------	65	3	
							Chestnut oak--------	66	3	
BaE---------------- Badin	8R	Moderate	Moderate	Slight	Moderate	Moderate	Loblolly pine-------	80	8	Loblolly pine.
							Shortleaf pine------	68	7	
							White oak-----------	63	3	
							Scarlet oak---------	65	3	
							Chestnut oak--------	66	3	
Ca----------------- Cartecay	10W	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	95	10	Loblolly pine, sweetgum, yellow-poplar.
							Sweetgum------------	95	8	
							Yellow-poplar-------	105	8	
							Water oak-----------	85	6	
CeB, CeC----------- Cecil	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	83	8	Loblolly pine.
							White oak-----------	79	4	
							Southern red oak----	79	4	
							Scarlet oak---------	81	4	
							Sweetgum------------	76	5	
							Yellow-poplar-------	92	6	
CfC2--------------- Cecil	7C	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	72	7	Loblolly pine.
							White oak-----------	64	3	
CgC**:										
Cecil-------------	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	83	8	Loblolly pine.
							White oak-----------	79	4	
							Southern red oak----	79	4	
							Scarlet oak---------	81	4	
							Sweetgum------------	76	5	
							Yellow-poplar-------	92	6	

See footnotes at end of table.

Table 7.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordi-nation symbol	Management concerns: Erosion hazard	Management concerns: Equip-ment limita-tion	Management concerns: Seedling mortal-ity	Management concerns: Wind-throw hazard	Management concerns: Plant competi-tion	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Produc-tivity class*	Trees to plant
CgC**:										
Urban land.										
Ch----------------- Chewacla	7W	Slight	Moderate	Slight	Moderate	Severe	Yellow-poplar-------	95	7	Sweetgum, yellow-poplar, loblolly pine.
							Loblolly pine-------	95	10	
							Sweetgum------------	97	9	
							Water oak-----------	80	5	
EnB, EnC----------- Enon	7A	Slight	Moderate	Slight	Slight	Slight	Loblolly pine-------	73	7	Loblolly pine.
							Sweetgum------------	87	7	
							White oak-----------	---	---	
							Yellow-poplar-------	88	6	
							Hickory-------------	---	---	
FrA---------------- Fork	9W	Slight	Moderate	Slight	Slight	Severe	Loblolly pine-------	90	9	Loblolly pine, yellow-poplar.
							Sweetgum------------	90	7	
							Yellow-poplar-------	90	6	
GeB, GeC----------- Georgeville	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine-------	81	8	Loblolly pine, black walnut, yellow-poplar.
							White oak-----------	69	4	
							Scarlet oak---------	70	4	
							Southern red oak----	67	3	
GeE---------------- Georgeville	8R	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine-------	81	8	Loblolly pine, black walnut, yellow-poplar.
							White oak-----------	69	4	
							Scarlet oak---------	70	4	
							Southern red oak----	67	3	
GoC2--------------- Georgeville	6C	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	70	6	Loblolly pine.
GoE2--------------- Georgeville	6C	Moderate	Severe	Moderate	Slight	Slight	Loblolly pine-------	70	6	Loblolly pine.
GuC**:										
Georgeville-------	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine-------	81	8	Loblolly pine, black walnut, yellow-poplar.
							White oak-----------	69	4	
							Scarlet oak---------	70	4	
							Southern red oak----	67	3	
Urban land.										

See footnotes at end of table.

Table 7.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
HeB, HeC, HeD------ Helena	8A	Slight	Slight	Slight	Slight	Severe	Loblolly pine-------	84	8	Loblolly pine, yellow-poplar.
							Yellow-poplar-------	---	---	
							Sweetgum------------	---	---	
							Black oak-----------	---	---	
							Willow oak----------	---	---	
							American elm--------	---	---	
HnB, HnC----------- Herndon	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine-------	80	8	Loblolly pine, yellow-poplar.
							White oak-----------	65	3	
							Southern red oak----	72	4	
							Yellow-poplar-------	91	6	
LdB, LdC----------- Lloyd	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	85	8	Loblolly pine.
							Southern red oak----	80	4	
							White oak-----------	80	4	
							Yellow-poplar-------	85	6	
LeC2--------------- Lloyd	7C	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	71	7	Loblolly pine.
							Shortleaf pine------	68	7	
							White oak-----------	70	4	
							Southern red oak----	75	4	
LeE2--------------- Lloyd	7R	Moderate	Moderate	Moderate	Slight	Slight	Loblolly pine-------	71	7	Loblolly pine.
							White oak-----------	70	4	
							Southern red oak----	75	4	
LxC**:										
Lloyd-------------	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	85	8	Loblolly pine.
							Southern red oak----	80	4	
							White oak-----------	80	4	
							Yellow-poplar-------	85	6	
Urban land.										
MaB, MaC----------- Madison	8A	Slight	Slight	Slight	Slight	Severe	Loblolly pine-------	80	8	Loblolly pine.
							Southern red oak----	75	4	
							Yellow-poplar-------	96	7	
							White oak-----------	75	4	
MaE---------------- Madison	8R	Moderate	Moderate	Slight	Slight	Severe	Loblolly pine-------	80	8	Loblolly pine.
							Southern red oak----	75	4	
							Yellow-poplar-------	96	7	
							White oak-----------	75	4	

See footnotes at end of table.

Table 7.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
MdC2--------------- Madison	7C	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine------- White oak-----------	72 ---	7 ---	Loblolly pine.
MdE2--------------- Madison	7R	Moderate	Moderate	Moderate	Slight	Severe	Loblolly pine------- White oak-----------	72 ---	7 ---	Loblolly pine.
MkB, MkC----------- Mecklenburg	7A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine------- Yellow-poplar------- White oak----------- Hickory-------------	79 97 --- ---	8 7 --- ---	Loblolly pine.
MkE---------------- Mecklenburg	7R	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine------- Yellow-poplar------- White oak----------- Hickory-------------	79 97 --- ---	8 7 --- ---	Loblolly pine.
MnC2, MnE2--------- Mecklenburg	6R	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine------- White oak----------- Hickory-------------	66 --- ---	6 --- ---	Loblolly pine.
PaB, PaC----------- Pacolet	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine------- Yellow-poplar------- Hickory------------- White oak-----------	78 90 --- ---	8 6 --- ---	Loblolly pine.
PaE---------------- Pacolet	8R	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine------- Yellow-poplar------- Hickory------------- White oak-----------	78 90 --- ---	8 6 --- ---	Yellow-poplar, loblolly pine.
PcB, PcC----------- Pacolet	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine------- Yellow-poplar------- Hickory------------- White oak-----------	78 90 --- ---	8 6 --- ---	Loblolly pine.
PcE---------------- Pacolet	8R	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine------- Yellow-poplar------- Hickory------------- White oak-----------	78 90 --- ---	8 6 --- ---	Loblolly pine.
PeC2--------------- Pacolet	6C	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine------- Hickory------------- White oak-----------	70 --- ---	6 --- ---	Loblolly pine.

See footnotes at end of table.

Table 7.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
PeE2 Pacolet	6R	Moderate	Moderate	Moderate	Slight	Slight	Loblolly pine	70	6	Loblolly pine.
							Hickory	---	---	
							White oak	---	---	
PfE**:										
Pacolet	8R	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine	78	8	Loblolly pine.
							Hickory	---	---	
							White oak	---	---	
Udorthents.										
PgB Pageland	6W	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	67	6	Loblolly pine.
							Southern red oak	---	---	
							White oak	---	---	
							Red maple	---	---	
							Blackgum	---	---	
							Yellow-poplar	---	---	
RaE**:										
Rion	8R	Moderate	Moderate	Moderate	Slight	Slight	Loblolly pine	80	8	Loblolly pine.
							Post oak	65	3	
							Southern red oak	80	4	
							White oak	70	4	
							Hickory	---	---	
Ashlar	8R	Moderate	Moderate	Slight	Moderate	Slight	Loblolly pine	85	8	Loblolly pine.
							Red oak	---	---	
Wake	5D	Moderate	Moderate	Moderate	Severe	Slight	Loblolly pine	60	5	Loblolly pine.
							Hickory	---	---	
							White oak	---	---	
ReC**:										
Rion	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine	80	8	Yellow-poplar, loblolly pine.
							Southern red oak	80	4	
							White oak	70	4	
							Yellow-poplar	90	6	
							Hickory	---	---	
Wateree	7A	Slight	Slight	Slight	Moderate	Slight	Loblolly pine	77	7	Loblolly pine.
							Southern red oak	72	4	
							Yellow-poplar	84	6	
							White oak	68	4	

See footnotes at end of table.

Table 7.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
ReC**:										
Wake	5D	Slight	Slight	Moderate	Severe	Slight	Loblolly pine	60	5	Loblolly pine.
							Hickory	---	---	
							White oak	---	---	
Ro: Roanoke	7W	Slight	Severe	Severe	Slight	Severe	Sweetgum	90	7	Sweetgum.
							Willow oak	76	4	
							White oak	75	4	
Sh: Shellbluff	10A	Slight	Slight	Slight	Slight	Moderate	Sweetgum	100	10	Loblolly pine.
							Yellow-poplar	105	8	
							Scarlet oak	100	6	
To: Toccoa	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	9	Loblolly pine, yellow-poplar.
							Yellow-poplar	107	8	
							Sweetgum	100	10	
							Southern red oak	---	---	
WeC: Wedowee	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	8	Loblolly pine.
							Southern red oak	70	4	
							White oak	65	3	
WeE: Wedowee	8R	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine	80	8	Loblolly pine.
							Southern red oak	70	4	
							White oak	65	3	
Wf: Wehadkee	8W	Slight	Severe	Moderate	Moderate	Severe	Yellow-poplar	100	8	Yellow-poplar, green ash, sweetgum.
							Sweetgum	94	8	
							Willow oak	110	8	
							Water oak	91	6	
							Green ash	---	---	
							American sycamore	---	---	
							River birch	---	---	
WhB: Wickham	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	9	Loblolly pine.
							Yellow-poplar	89	6	
							White oak	84	5	
							Southern red oak	82	4	
							Sweetgum	---	---	
							Red maple	---	---	
							Water oak	---	---	
							Hickory	---	---	

See footnotes at end of table.

Table 7.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
WkF---------------- Wilkes	7R	Moderate	Moderate	Moderate	Moderate	Moderate	Loblolly pine------- Sweetgum------------ Southern red oak---- Blackjack oak------- White oak----------- Shagbark hickory----	79 82 76 --- --- ---	4 6 4 --- --- ---	Loblolly pine.
ZnC---------------- Zion	6D	Slight	Slight	Slight	Moderate	Moderate	Loblolly pine------- Red oak-------------	70 ---	6 ---	Loblolly pine.
ZnE---------------- Zion	6R	Moderate	Moderate	Slight	Moderate	Moderate	Loblolly pine------- Red oak-------------	70 ---	6 ---	Loblolly pine.

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 8.—Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
AkA------------------- Altavista	Severe: flooding.	Moderate: flooding.	Moderate: wetness.	Moderate: wetness.
AmB------------------- Appling	Slight---------------	Slight---------------	Moderate: slope, small stones.	Slight.
AmC------------------- Appling	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
BaC------------------- Badin	Severe: too acid.	Severe: too acid.	Severe: slope, too acid.	Slight.
BaE------------------- Badin	Severe: slope, too acid.	Severe: slope, too acid.	Severe: slope, too acid.	Moderate: slope.
Ca-------------------- Cartecay	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness.
CeB------------------- Cecil	Slight---------------	Slight---------------	Moderate: slope, small stones.	Slight.
CeC, CfC2------------- Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
CgC*:				
Cecil----------------	Slight---------------	Slight---------------	Severe: slope.	Slight.
Urban land.				
Ch-------------------- Chewacla	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.
Dp*. Dumps-Pits				
EnB------------------- Enon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight.
EnC------------------- Enon	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight.
FrA------------------- Fork	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.

See footnote at end of table.

Table 8.—Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
GeB------------------- Georgeville	Slight---------------	Slight---------------	Moderate: slope, small stones.	Severe: erodes easily.
GeC------------------- Georgeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
GeE------------------- Georgeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
GoC2------------------ Georgeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
GoE2------------------ Georgeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
GuC*:				
Georgeville----------	Slight---------------	Slight---------------	Severe: slope.	Severe: erodes easily.
Urban land.				
HeB------------------- Helena	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.
HeC, HeD-------------- Helena	Moderate: wetness.	Moderate: wetness, percs slowly.	Severe: slope, wetness, percs slowly.	Moderate: wetness.
HnB------------------- Herndon	Slight---------------	Slight---------------	Moderate: slope.	Severe: erodes easily.
HnC------------------- Herndon	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
LdB------------------- Lloyd	Slight---------------	Slight---------------	Moderate: slope.	Slight.
LdC, LeC2------------- Lloyd	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
LeE2------------------ Lloyd	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
LxC*:				
Lloyd----------------	Slight---------------	Slight---------------	Severe: slope.	Slight.
Urban land.				
MaB------------------- Madison	Slight---------------	Slight---------------	Moderate: slope, small stones.	Slight.
MaC------------------- Madison	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.

See footnote at end of table.

Table 8.—Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
MaE------------------- Madison	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
MdC2------------------ Madison	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
MdE2------------------ Madison	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
MkB------------------- Mecklenburg	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight.
MkC------------------- Mecklenburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
MkE------------------- Mecklenburg	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
MnC2, MnE2------------ Mecklenburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
PaB------------------- Pacolet	Moderate: small stones, too sandy.	Moderate: too sandy, small stones.	Severe: small stones.	Moderate: too sandy.
PaC------------------- Pacolet	Moderate: slope, small stones.	Moderate: slope, too sandy.	Severe: slope, small stones.	Moderate: too sandy.
PaE------------------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, too sandy.
PcB------------------- Pacolet	Slight---------------	Slight---------------	Moderate: slope, small stones.	Slight.
PcC------------------- Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
PcE------------------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
PeC2------------------ Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
PeE2------------------ Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
PfE*:				
Pacolet--------------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Udorthents.				
PgB------------------- Pageland	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Severe: erodes easily.

See footnote at end of table.

Table 8.—Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Pr*. Pits, quarry				
RaE*:				
Rion	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Ashlar	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: too sandy.
Wake	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: too sandy, slope.
ReC*:				
Rion	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight.
Wateree	Slight	Slight	Severe: slope.	Slight.
Wake	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: too sandy.
Ro Roanoke	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.
Sh Shellbluff	Severe: flooding.	Slight	Moderate: flooding.	Slight.
To Toccoa	Severe: flooding.	Slight	Moderate: flooding.	Slight.
Ue. Udorthents, excavated				
Ur. Udorthents, loamy				
WeC Wedowee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
WeE Wedowee	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Wf Wehadkee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.
WhB Wickham	Slight	Slight	Moderate: slope.	Slight.

See footnote at end of table.

Table 8.—Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
WkF-------------------- Wilkes	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.
ZnC-------------------- Zion	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Severe: erodes easily.
ZnE-------------------- Zion	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 9.—Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
AkA---Altavista	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
AmB---Appling	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AmC---Appling	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BaC---Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
BaE---Badin	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ca---Cartecay	Poor	Fair	Fair	Good	Good	Fair	Poor	Fair	Good	Fair.
CeB---Cecil	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CeC---Cecil	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CfC2---Cecil	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CgC*:										
Cecil	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
Ch---Chewacla	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Dp*. Dumps-Pits										
EnB---Enon	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EnC---Enon	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FrA---Fork	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
GeB, GeC---Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GeE---Georgeville	Very poor.	Very poor.	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

Table 9.—Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
GoC2 Georgeville	Poor	Poor	Poor	Fair	Poor	Very poor.	Very poor.	Poor	Fair	Very poor.
GoE2 Georgeville	Very poor.	Very poor.	Poor	Fair	Poor	Very poor.	Very poor.	Poor	Fair	Very poor.
GuC*:										
Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
HeB Helena	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HeC, HeD Helena	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HnB Herndon	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HnC Herndon	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LdB Lloyd	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LdC Lloyd	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LeC2 Lloyd	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
LeE2 Lloyd	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LxC*:										
Lloyd	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
MaB Madison	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MaC Madison	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MaE Madison	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MdC2 Madison	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
MdE2 Madison	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

Table 9.—Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
MkB---------------- Mecklenburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MkC---------------- Mecklenburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MkE---------------- Mecklenburg	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MnC2, MnE2--------- Mecklenburg	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
PaB, PaC----------- Pacolet	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PaE---------------- Pacolet	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PcB, PcC----------- Pacolet	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PcE---------------- Pacolet	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PeC2--------------- Pacolet	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PeE2--------------- Pacolet	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
PfE*:										
Pacolet-----------	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Udorthents.										
PgB---------------- Pageland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pr*. Pits, quarry										
RaE*:										
Rion--------------	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Ashlar------------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Wake--------------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
ReC*:										
Rion--------------	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wateree-----------	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

Table 9.—Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
ReC*:										
Wake	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Ro Roanoke	Poor	Poor	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Sh Shellbluff	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
To Toccoa	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ue. Udorthents, excavated										
Ur. Udorthents, loamy										
WeC Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WeE Wedowee	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wf Wehadkee	Very poor.	Poor	Poor	Fair	Fair	Good	Fair	Poor	Fair	Fair.
WhB Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WkF Wilkes	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
ZnC Zion	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ZnE Zion	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 10.—Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AkA--------------- Altavista	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: low strength, wetness, flooding.	Severe: too acid.
AmB--------------- Appling	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
AmC--------------- Appling	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
BaC--------------- Badin	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Severe: too acid.
BaE--------------- Badin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: too acid, slope.
Ca---------------- Cartecay	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
CeB--------------- Cecil	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
CeC, CfC2--------- Cecil	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
CgC*:						
Cecil------------	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
Urban land.						
Ch---------------- Chewacla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Dp*. Dumps-Pits						
EnB--------------- Enon	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
EnC--------------- Enon	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.

See footnote at end of table.

Table 10.—Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
FrA: Fork	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
GeB: Georgeville	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
GeC: Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
GeE: Georgeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GoC2: Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
GoE2: Georgeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GuC*:						
Georgeville	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Urban land.						
HeB: Helena	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
HeC, HeD: Helena	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: wetness.
HnB: Herndon	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
HnC: Herndon	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
LdB: Lloyd	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
LdC, LeC2: Lloyd	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
LeE2: Lloyd	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LxC*:						
Lloyd	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Urban land.						
MaB: Madison	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.

See footnote at end of table.

Table 10.—Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MaC: Madison	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
MaE: Madison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MdC2: Madison	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
MdE2: Madison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MkB: Mecklenburg	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MkC: Mecklenburg	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
MkE: Mecklenburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
MnC2, MnE2: Mecklenburg	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
PaB: Pacolet	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Moderate: small stones, too sandy.
PaC: Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: small stones, slope.
PaE: Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PcB: Pacolet	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
PcC: Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
PcE: Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PeC2: Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
PeE2: Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

Table 10.—Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
PfE*:						
Pacolet----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Udorthents.						
PgB--------------- Pageland	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness, depth to rock.
Pr*. Pits, quarry						
RaE*:						
Rion-------------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ashlar-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Wake-------------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
ReC*:						
Rion-------------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: small stones, large stones.
Wateree----------	Severe: cutbanks cave.	Slight---------	Moderate: depth to rock.	Moderate: slope.	Slight---------	Moderate: droughty, depth to rock.
Wake-------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, droughty.
Ro---------------- Roanoke	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: too acid, wetness.
Sh---------------- Shellbluff	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: flooding.
To---------------- Toccoa	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Ue. Udorthents, excavated						
Ur. Udorthents, loamy						

See footnote at end of table.

Table 10.—Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
WeC--------------- Wedowee	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
WeE--------------- Wedowee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Wf---------------- Wehadkee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
WhB--------------- Wickham	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
WkF--------------- Wilkes	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.
ZnC--------------- Zion	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty, depth to rock.
ZnE--------------- Zion	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.—Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AkA: Altavista	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding, too acid.	Severe: wetness, flooding.	Poor: too acid.
AmB: Appling	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
AmC: Appling	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
BaC: Badin	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
BaE: Badin	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
Ca: Cartecay	Unsuited: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
CeB: Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
CeC, CfC2: Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
CgC*:					
Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
Urban land.					
Ch: Chewacla	Unsuited: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
Dp*. Dumps-Pits					

See footnote at end of table.

Table 11.—Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
EnB: Enon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
EnC: Enon	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
FrA: Fork	Unsuited: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
GeB: Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
GeC: Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
GeE: Georgeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
GoC2: Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
GoE2: Georgeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
GuC*:					
Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
Urban land.					
HeB: Helena	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
HeC, HeD: Helena	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
HnB: Herndon	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
HnC: Herndon	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
LdB: Lloyd	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.

See footnote at end of table.

Table 11.—Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LdC, LeC2----------- Lloyd	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
LeE2---------------- Lloyd	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
LxC*:					
Lloyd--------------	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey, hard to pack.
Urban land.					
MaB----------------- Madison	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Fair: too clayey.
MaC----------------- Madison	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey.
MaE----------------- Madison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
MdC2---------------- Madison	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey.
MdE2---------------- Madison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
MkB----------------- Mecklenburg	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.
MkC----------------- Mecklenburg	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
MkE----------------- Mecklenburg	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
MnC2, MnE2---------- Mecklenburg	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
PaB----------------- Pacolet	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Fair: small stones.
PaC----------------- Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
PaE----------------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

See footnote at end of table.

Table 11.—Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PcB: Pacolet	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: too clayey.
PcC: Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
PcE: Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PeC2: Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
PeE2: Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PfE*:					
Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Udorthents.					
PgB: Pageland	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: depth to rock.
Pr*. Pits, quarry					
RaE*:					
Rion	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Ashlar	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Wake	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
ReC*:					
Rion	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
Wateree	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
Wake	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, seepage, small stones.

See footnote at end of table.

Table 11.—Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ro------------------ Roanoke	Unsuited: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Sh------------------ Shellbluff	Unsuited: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
To------------------ Toccoa	Unsuited: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Good.
Ue. Udorthents, excavated					
Ur. Udorthents, loamy					
WeC----------------- Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
WeE----------------- Wedowee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Wf------------------ Wehadkee	Unsuited: flooding, ponding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness, thin layer.
WhB----------------- Wickham	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
WkF----------------- Wilkes	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
ZnC----------------- Zion	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
ZnE----------------- Zion	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.—Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AkA: Altavista	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
AmB, AmC: Appling	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
BaC, BaE: Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, too acid.
Ca: Cartecay	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
CeB, CeC, CfC2: Cecil	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CgC*:				
Cecil	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
Ch: Chewacla	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Dp*. Dumps-Pits				
EnB, EnC: Enon	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
FrA: Fork	Poor: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
GeB, GeC: Georgeville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GeE: Georgeville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
GoC2: Georgeville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GoE2: Georgeville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.

See footnote at end of table.

Table 12.—Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
GuC*:				
Georgeville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
HeB, HeC, HeD Helena	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
HnB, HnC Herndon	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LdB, LdC, LeC2 Lloyd	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LeE2 Lloyd	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
LxC*:				
Lloyd	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
MaB, MaC Madison	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MaE Madison	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
MdC2 Madison	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MdE2 Madison	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
MkB, MkC Mecklenburg	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MkE Mecklenburg	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
MnC2, MnE2 Mecklenburg	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PaB, PaC Pacolet	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PaE Pacolet	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PcB, PcC Pacolet	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

Table 12.—Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PcE------------------- Pacolet	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
PeC2------------------ Pacolet	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PeE2------------------ Pacolet	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
PfE*:				
Pacolet--------------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Udorthents.				
PgB------------------- Pageland	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Pr*. Pits, quarry				
RaE*:				
Rion-----------------	Fair: slope.	Probable-------------	Probable-------------	Poor: small stones, area reclaim, slope.
Ashlar---------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Wake-----------------	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, area reclaim, small stones.
ReC*:				
Rion-----------------	Good-----------------	Probable-------------	Probable-------------	Poor: small stones, area reclaim.
Wateree--------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Wake-----------------	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, area reclaim, small stones.
Ro-------------------- Roanoke	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness, too acid.
Sh-------------------- Shellbluff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

Table 12.—Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
To-------------------- Toccoa	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Good.
Ue. Udorthents, excavated				
Ur. Udorthents, loamy				
WeC------------------- Wedowee	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WeE------------------- Wedowee	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Wf-------------------- Wehadkee	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
WhB------------------- Wickham	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
WkF------------------- Wilkes	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, small stones.
ZnC------------------- Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
ZnE------------------- Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.—Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "moderate" and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
AkA: Altavista	Moderate: seepage.	Severe: piping, wetness.	Too acid	Wetness	Wetness, soil blowing.	Favorable.
AmB: Appling	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope	Soil blowing	Favorable.
AmC: Appling	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope, soil blowing.	Slope.
BaC: Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock, too acid.	Depth to rock	Depth to rock.
BaE: Badin	Severe: slope.	Severe: thin layer.	Deep to water	Slope, depth to rock, too acid.	Slope, depth to rock.	Slope, depth to rock.
Ca: Cartecay	Severe: seepage.	Severe: piping, wetness.	Flooding	Flooding	Wetness	Wetness.
CeB: Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope, soil blowing.	Soil blowing	Favorable.
CeC: Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
CfC2: Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
CgC*:						
Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope, soil blowing.	Soil blowing	Favorable.
Urban land.						
Ch: Chewacla	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
Dp*. Dumps-Pits						
EnB: Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Soil blowing, percs slowly.	Percs slowly.

See footnote at end of table.

Table 13.—Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
EnC---------------- Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Slope, soil blowing, percs slowly.	Slope, percs slowly.
FrA---------------- Fork	Moderate: seepage.	Severe: piping, wetness.	Flooding-------	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
GeB---------------- Georgeville	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
GeC, GeE, GoC2, GoE2------------- Georgeville	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
GuC*:						
Georgeville------	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Urban land.						
HeB---------------- Helena	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope, too acid.	Slope, wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
HeC, HeD---------- Helena	Severe: slope.	Severe: hard to pack.	Percs slowly, slope, too acid.	Slope, wetness, percs slowly.	Slope, wetness, percs slowly.	Slope, percs slowly.
HnB---------------- Herndon	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
HnC---------------- Herndon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
LdB---------------- Lloyd	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope----------	Favorable------	Favorable.
LdC, LeC2, LeE2--- Lloyd	Severe: slope.	Severe: hard to pack.	Deep to water	Slope----------	Slope----------	Slope.
LxC*:						
Lloyd------------	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope----------	Favorable------	Favorable.
Urban land.						
MaB---------------- Madison	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Erodes easily	Erodes easily.
MaC, MaE, MdC2, MdE2------------- Madison	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

Table 13.—Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
MkB--------------- Mecklenburg	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Percs slowly---	Percs slowly.
MkC, MkE, MnC2, MnE2------------- Mecklenburg	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
PaB--------------- Pacolet	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, fast intake.	Soil blowing---	Favorable.
PaC, PaE---------- Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope, fast intake.	Slope, soil blowing.	Slope.
PcB--------------- Pacolet	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope----------	Soil blowing---	Favorable.
PcC, PcE---------- Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope----------	Slope, soil blowing.	Slope.
PeC2, PeE2-------- Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope----------	Slope----------	Slope.
PfE*:						
Pacolet----------	Severe: slope.	Severe: piping.	Deep to water	Slope----------	Slope----------	Slope.
Udorthents.						
PgB--------------- Pageland	Moderate: depth to rock, slope.	Severe: piping.	Depth to rock, slope.	Slope, wetness, depth to rock.	Depth to rock, erodes easily.	Erodes easily, depth to rock.
Pr*. Pits, quarry						
RaE*:						
Rion-------------	Severe: seepage, slope.	Severe: piping.	Deep to water	Droughty, slope.	Slope----------	Slope, droughty.
Ashlar-----------	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, depth to rock, soil blowing.	Slope, droughty, depth to rock.
Wake-------------	Severe: depth to rock, slope.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Slope, depth to rock, too sandy.	Slope, droughty, depth to rock.
ReC*:						
Rion-------------	Severe: seepage.	Severe: piping.	Deep to water	Droughty, slope.	Favorable------	Droughty.
Wateree----------	Severe: seepage.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Depth to rock, soil blowing.	Droughty, depth to rock.

See footnote at end of table.

Table 13.—Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
ReC*:						
Wake	Severe: depth to rock.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Depth to rock, too sandy.	Droughty, depth to rock.
Ro Roanoke	Severe: seepage.	Severe: wetness.	Percs slowly, flooding, too acid.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Sh Shellbluff	Moderate: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
To Toccoa	Severe: seepage.	Severe: piping.	Flooding	Flooding	Favorable	Favorable.
Ue. Udorthents, excavated						
Ur. Udorthents, loamy						
WeC, WeE Wedowee	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
Wf Wehadkee	Moderate: seepage.	Severe: piping, wetness.	Flooding	Wetness, soil blowing, flooding.	Wetness, soil blowing.	Wetness.
WhB Wickham	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Soil blowing	Favorable.
WkF Wilkes	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
ZnC Zion	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty.	Depth to rock, erodes easily.	Erodes easily, droughty.
ZnE Zion	Severe: slope.	Severe: thin layer.	Deep to water	Slope, droughty.	Slope, depth to rock, erodes easily.	Slope, erodes easily, droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.—Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
AkA-------------- Altavista	0-10	Sandy loam-------	ML, CL-ML, SM, SC-SM	A-4	0	95-100	90-100	65-99	35-60	20-30	NP-7
	10-39	Clay loam, sandy clay loam, loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7	0	95-100	95-100	60-99	45-75	25-45	5-28
	39-60	Variable---------	---	---	---	---	---	---	---	---	---
AmB, AmC--------- Appling	0-9	Sandy loam-------	SM, SC-SM	A-2	0-5	86-100	80-100	55-91	15-35	15-35	NP-7
	9-33	Sandy clay, clay loam, clay, sandy clay loam.	MH, ML, CL	A-7	0-5	95-100	90-100	70-95	51-80	41-74	15-30
	33-41	Sandy clay, clay loam, sandy clay loam.	SC, CL	A-4, A-6, A-7	0-5	95-100	85-100	70-90	40-75	30-50	8-22
	41-60	Variable---------	---	---	---	---	---	---	---	---	---
BaC, BaE--------- Badin	0-4	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-5	85-100	75-95	65-90	60-85	25-40	5-15
	4-23	Silty clay, silty clay loam, channery clay loam, channery silty clay loam.	CL, CH	A-6, A-7	0-5	65-100	60-100	55-100	50-98	45-65	15-35
	23-45	Weathered bedrock	---	---	---	---	---	---	---	---	---
	45-49	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ca--------------- Cartecay	0-9	Loam-------------	ML, CL, CL-ML	A-4, A-6	0	98-100	95-100	90-100	51-95	<40	NP-15
	9-25	Sandy loam, fine sandy loam, loam.	SM, SC, SC, SM	A-2, A-4	0	90-100	75-100	60-85	25-50	<30	NP-10
	25-60	Loamy sand, sand, sandy loam.	SM, SP-SM	A-2, A-1, A-3	0	80-100	35-95	25-80	5-35	---	NP
CeB, CeC--------- Cecil	0-8	Sandy loam-------	SM, SC-SM	A-2, A-4	0-5	84-100	80-100	67-90	26-42	15-30	NP-7
	8-16	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-40	3-17
	16-55	Clay, clay loam, sandy clay.	MH, ML, CH	A-7, A-5	0-5	97-100	92-100	72-100	55-95	41-80	9-37
	55-60	Variable---------	---	---	---	---	---	---	---	---	---
CfC2------------- Cecil	0-3	Sandy clay loam	SM, SC, CL, ML	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-40	3-17
	3-7	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-40	3-17
	7-55	Clay, clay loam, sandy clay.	MH, ML, CH	A-7, A-5	0-5	97-100	92-100	72-100	55-95	41-80	9-37
	55-60	Variable---------	---	---	---	---	---	---	---	---	---
CgC*:											
Cecil-----------	0-8	Sandy loam-------	SM, SC-SM	A-2, A-4	0-5	84-100	80-100	67-90	26-42	15-30	NP-7
	8-16	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-40	3-17
	16-55	Clay, clay loam, sandy clay.	MH, ML, CH	A-7, A-5	0-5	97-100	92-100	72-100	55-95	41-80	9-37
	55-60	Variable---------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
CgC*: Urban land.											
Ch---------------- Chewacla	0-6	Loam-------------	ML, CL, CL-ML	A-4, A-6, A-7	0	98-100	95-100	70-100	55-90	25-49	4-20
	6-36	Silt loam, silty clay loam, clay loam.	ML, CL	A-4, A-6, A-7	0	96-100	95-100	80-100	51-98	30-49	4-22
	36-45	Silt loam, clay loam, silty clay loam, sandy clay loam, clay loam.	ML, MH, CL, CH	A-4, A-6, A-7	0	85-100	75-100	60-100	51-98	22-61	4-28
	45-60	Variable---------	---	---	---	---	---	---	---	---	---
Dp*. Dumps-Pits											
EnB, EnC--------- Enon	0-8	Fine sandy loam	SM, SC-SM, SC	A-2-4, A-4	0-5	80-100	80-100	60-85	25-49	20-30	NP-10
	8-38	Clay loam, clay	CH, CL	A-7-6	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	38-60	Variable---------	---	---	---	---	---	---	---	---	---
FrA-------------- Fork	0-9	Silt loam--------	ML, SM, CL, SC	A-4	0	95-100	90-100	70-100	40-80	<30	NP-10
	9-46	Clay loam, sandy clay loam, loam.	SC, CL, ML, SM	A-4, A-6, A-7	0	95-100	90-100	80-100	35-80	32-46	8-20
	46-60	Loamy fine sand, sandy loam, silty clay loam.	SC, CL, ML, SM	A-2, A-4, A-6	0	95-100	70-100	65-100	20-85	15-40	NP-20
GeB, GeC, GeE---- Georgeville	0-6	Silt loam--------	ML	A-4, A-6	0-2	90-100	80-100	65-100	55-95	<40	NP-11
	6-15	Silty clay loam, silty clay, clay loam.	CL, ML, CL-ML	A-6, A-7, A-4	0-1	90-100	90-100	85-100	70-98	30-49	8-20
	15-50	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	95-100	90-100	75-98	41-85	15-45
	50-60	Silty clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-100	51-95	<30	NP-12
GoC2, GoE2------- Georgeville	0-3	Clay loam--------	CL, ML	A-6, A-7, A-4	0-2	90-100	90-100	85-100	65-98	24-49	3-20
	3-7	Silty clay loam, clay loam, silty clay.	CL, ML, CL-ML	A-6, A-7, A-4	0-1	90-100	90-100	85-100	70-98	30-49	8-20
	7-47	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	95-100	90-100	75-98	41-85	15-45
	47-60	Silty clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-100	51-95	<30	NP-12
GuC*:											
Georgeville-----	0-6	Silt loam--------	ML	A-4, A-6	0-2	90-100	80-100	65-100	55-95	<40	NP-11
	6-15	Silty clay loam, clay loam, silty clay.	CL, ML, CL-ML	A-6, A-7, A-4	0-1	90-100	90-100	85-100	70-98	30-49	8-20
	15-50	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	95-100	90-100	75-98	41-85	15-45
	50-60	Silty clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-100	51-95	<30	NP-12

See footnote at end of table.

Table 14.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
GuC*: Urban land.											
HeB, HeC, HeD----Helena	0-11	Sandy loam-------	SM, SC-SM, SC, ML	A-2, A-4	0-5	90-100	90-100	51-95	26-75	15-35	NP-10
	11-18	Sandy clay loam, clay loam.	CL, SC	A-6, A-7	0-5	95-100	95-100	70-90	38-70	30-49	15-26
	18-37	Clay loam, sandy clay, clay.	CH	A-7	0-5	95-100	95-100	73-97	56-86	50-85	24-50
	37-60	Variable---------	---	---	---	---	---	---	---	---	---
HnB, HnC---------Herndon	0-11	Very fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0-2	90-100	85-100	80-98	60-90	<36	NP-12
	11-50	Silty clay loam, silty clay, clay.	MH, ML, CL	A-7	0-1	98-100	90-100	80-99	70-98	41-70	13-40
	50-60	Silt loam, loam, fine sandy loam.	MH, ML	A-7, A-5	0-2	90-100	85-100	80-99	51-95	41-70	9-36
LdB, LdC---------Lloyd	0-6	Loam-------------	CL, ML, CL-ML	A-7-6, A-6, A-4	0-2	95-100	95-100	88-100	50-85	25-49	3-23
	6-53	Clay, silty clay, clay loam, sandy clay.	ML, MH	A-7-5, A-7-6	0-2	95-100	95-100	80-100	51-95	40-80	12-36
	53-60	Sandy loam, loam, sandy clay loam, clay loam.	SM, ML, SC-SM, CL	A-4, A-6, A-7	0-5	90-100	85-99	60-90	36-70	20-49	4-20
LeC2, LeE2-------Lloyd	0-3	Clay loam--------	CL, ML, CL-ML	A-7-6, A-6, A-4	0-2	95-100	95-100	88-100	50-85	25-49	3-23
	3-50	Clay, silty clay, clay loam, sandy clay.	ML, MH	A-7-5, A-7-6	0-2	95-100	95-100	80-100	51-95	40-80	12-36
	50-60	Sandy loam, loam, sandy clay loam, clay loam.	SM, ML, SC-SM, CL	A-4, A-6, A-7	0-5	90-100	85-99	60-90	36-70	20-49	4-20
LxC*: Lloyd-----------	0-6	Loam-------------	CL, ML, CL-ML	A-7-6, A-6, A-4	0-2	95-100	95-100	88-100	50-85	25-49	3-23
	6-53	Clay, silty clay, clay loam, sandy clay.	ML, MH	A-7-5, A-7-6	0-2	95-100	95-100	80-100	51-95	40-80	12-36
	53-60	Sandy loam, loam, sandy clay loam, clay loam.	SM, ML, SC-SM, CL	A-4, A-6, A-7	0-5	90-100	85-99	60-90	36-70	20-49	4-20
Urban land.											
MaB, MaC, MaE----Madison	0-5	Sandy loam-------	SM, ML	A-2, A-4	0-3	85-100	80-100	60-90	26-55	25-35	NP-8
	5-25	Clay, clay loam, sandy clay loam, sandy clay.	MH, ML	A-7	0-3	90-100	85-100	75-100	57-85	43-75	12-35
	25-37	Loam, sandy clay loam, clay loam.	CL	A-4, A-6	0-3	90-100	85-100	70-95	50-80	30-40	7-20
	37-60	Fine sandy loam, sandy loam, sandy clay loam, loam.	SM, ML	A-2, A-4	0-5	85-100	80-100	60-90	26-55	25-35	NP-7

See footnote at end of table.

Table 14.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
MdC2, MdE2-------Madison	0-4	Sandy clay loam	CL, ML, SC	A-4, A-6, A-7-6	0-3	90-100	85-100	70-95	46-80	30-50	7-20
	4-16	Clay, clay loam, sandy clay loam, sandy clay.	MH, ML	A-7	0-3	90-100	85-100	75-100	57-85	43-75	12-35
	16-30	Loam, sandy clay loam, clay loam.	CL	A-4, A-6	0-3	90-100	85-100	70-95	50-80	30-40	7-20
	30-60	Fine sandy loam, sandy loam, sandy clay loam, loam.	SM, ML	A-2, A-4	0-5	85-100	80-100	60-90	26-55	25-35	NP-7
MkB, MkC, MkE----Mecklenburg	0-8	Sandy loam-------	ML, SM, CL-ML, CL	A-4, A-6	0-5	90-100	80-100	65-90	36-65	20-40	NP-15
	8-27	Clay-------------	CH, MH	A-7	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	27-32	Loam, sandy clay loam, clay loam.	CL	A-4, A-6, A-7	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	32-60	Variable---------	---	---	---	---	---	---	---	---	---
MnC2, MnE2-------Mecklenburg	0-2	Sandy clay loam	CL	A-6, A-7-6	0-5	90-100	90-100	80-100	50-80	25-49	11-25
	2-22	Clay-------------	CH, MH	A-7	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	22-37	Loam, sandy clay loam, clay loam.	CL	A-4, A-6, A-7	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	37-60	Variable---------	---	---	---	---	---	---	---	---	---
PaB, PaC, PaE----Pacolet	0-6	Fine gravelly loamy coarse sand.	SM, SP-SM	A-1-b, A-2-4	0-3	75-90	65-85	40-65	15-30	15-30	NP-3
	6-26	Sandy clay, clay loam, clay.	ML, MH	A-6, A-7	0-1	80-100	80-100	60-95	51-75	38-65	11-30
	26-60	Clay loam, sandy clay loam, sandy loam.	CL-ML, SC-SM, SC, CL	A-2, A-4, A-6	0-2	80-100	70-100	60-80	30-60	20-35	5-15
PcB, PcC, PcE----Pacolet	0-5	Sandy loam-------	SM, SC-SM	A-2, A-1-b, A-4	0-2	85-100	80-100	42-90	16-42	<28	NP-7
	5-24	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	24-60	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-2	80-100	70-100	60-80	30-60	20-35	5-15
PeC2, PeE2-------Pacolet	0-5	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	5-18	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	18-37	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	37-60	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-2	80-100	70-100	60-90	25-50	<28	NP-6

See footnote at end of table.

Table 14.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
PfE*:											
Pacolet---------	0-5	Sandy clay loam	SC-SM, SC	A-4, A-6	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	5-18	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	18-37	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	37-60	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-2	80-100	70-100	60-90	25-50	<28	NP-6
Udorthents.											
PgB-------------- Pageland	0-3	Silt loam--------	ML, CL	A-4	0-1	90-100	88-100	80-95	70-90	16-40	NP-10
	3-20	Silty clay loam, silt loam.	CL, ML	A-4, A-6, A-5, A-7	0-1	95-100	90-100	90-98	80-95	20-49	7-26
	20-26	Silt loam, silty clay loam, silty clay.	ML, CL	A-4, A-6	0-2	95-100	90-100	90-98	89-95	16-40	7-27
	26-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
Pr*. Pits, quarry											
RaE*:											
Rion------------	0-10	Fine gravelly sandy loam.	SM, SP-SM	A-2, A-1-b	2-10	70-90	60-75	40-60	10-35	<30	NP-7
	10-23	Fine gravelly sandy loam, fine gravelly sandy clay loam, fine gravelly clay loam.	SC-SM, SC	A-2, A-4, A-1-b, A-6	2-10	70-90	60-75	40-60	20-45	20-35	5-15
	23-60	Fine gravelly sandy loam, fine gravelly sandy clay loam, fine gravelly loamy sand.	SM, SC, SP-SM, SP-SC	A-2, A-4, A-1-b, A-6	2-10	70-90	55-75	40-60	10-45	<30	NP-12
Ashlar----------	0-13	Fine gravelly loamy coarse sand.	SW-SM, SP-SM	A-1	0-2	85-90	50-75	25-40	6-10	<25	NP-6
	13-27	Sandy loam, fine sandy loam, fine gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-1, A-2, A-4	0-8	55-100	50-100	30-75	15-50	<25	NP-6
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wake------------	0-17	Fine gravelly loamy coarse sand.	SP-SM, SM, GM, GP-GM	A-2, A-3, A-1	0-10	45-85	40-80	30-70	5-15	10-20	NP
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
ReC*:											
Rion	0-10	Fine gravelly sandy loam.	SM, SP-SM	A-2, A-1-b	2-10	70-90	60-75	40-60	10-35	<30	NP-7
	10-23	Fine gravelly sandy loam, fine gravelly sandy clay loam, fine gravelly clay loam.	SC-SM, SC	A-2, A-4, A-1-b, A-6	2-10	70-90	60-75	40-60	20-45	20-35	5-15
	23-60	Fine gravelly sandy loam, fine gravelly sandy clay loam, fine gravelly loamy sand.	SM, SC, SP-SM, SP-SC	A-2, A-4, A-1-b, A-6	2-10	70-90	55-75	40-60	10-45	<30	NP-12
Wateree	0-9	Loamy sand	SM	A-1, A-2	0-5	80-100	75-95	40-75	15-28	---	NP
	9-25	Coarse sandy loam, sandy loam.	SM	A-2	0-5	80-100	75-95	45-80	25-35	<30	NP-7
	25-43	Weathered bedrock	---	---	---	---	---	---	---	---	---
	43-47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wake	0-17	Fine gravelly loamy coarse sand.	SP-SM, SM, GM, GP-GM	A-2, A-3, A-1	0-10	45-85	40-80	30-70	5-15	10-20	NP
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ro Roanoke	0-8	Silt loam	SC-SM, CL-ML, CL, SC	A-4, A-6	0	95-100	85-100	60-100	35-90	20-35	5-16
	8-50	Clay, silty clay, clay loam.	CH, CL	A-7	0	90-100	85-100	85-100	65-95	45-70	22-40
	50-60	Stratified sand to clay.	CL-ML, GM-GC, CH, SM	A-1, A-2, A-4	0-5	40-100	35-100	25-95	15-90	10-60	NP-40
Sh Shellbluff	0-3	Silt loam	ML, CL-ML, CL	A-4, A-6	0	98-100	95-100	90-100	75-95	15-40	NP-14
	3-60	Silty clay loam, silt loam, loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	98-100	95-100	70-100	70-95	20-41	4-22
To Toccoa	0-7	Loam	ML	A-4	0	98-100	95-100	75-90	55-80	<30	NP-4
	7-60	Sandy loam, loam, loamy sand.	SM, ML	A-2, A-4	0	95-100	90-100	60-100	30-55	<30	NP-4
Ue. Udorthents, excavated											
Ur. Udorthents, loamy											

See footnote at end of table.

Table 14.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
WeC, WeE--------- Wedowee	0-7	Sandy loam-------	SM, SC-SM	A-4, A-2-4	0	95-100	80-100	50-99	23-50	<30	NP-6
	7-11	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	90-100	90-100	80-97	40-75	<32	NP-15
	11-37	Sandy clay, sandy clay loam, clay loam, clay.	SC, ML, CL, MH	A-6, A-7	0	95-100	95-100	65-97	45-75	28-58	5-30
	37-60	Sandy clay loam, clay loam, loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	80-100	70-100	60-80	30-60	20-54	5-25
Wf--------------- Wehadkee	0-6	Loam-------------	SM, SC, SC-SM	A-2, A-4	0	100	95-100	60-90	30-50	20-30	NP-10
	6-30	Silty clay loam, loam, sandy clay loam, clay loam.	CL, CL-ML, ML, SC	A-6, A-7, A-4	0	100	99-100	85-100	45-98	25-58	6-25
	30-60	Variable---------	---	---	---	---	---	---	---	---	---
WhB-------------- Wickham	0-6	Sandy loam-------	SM, SC-SM, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	15-25	NP-7
	6-50	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	3-15
	50-60	Variable---------	---	---	---	---	---	---	---	---	---
WkF-------------- Wilkes	0-7	Very stony loam	SM, SC-SM	A-2, A-4, A-1-b	3-15	70-80	60-75	45-75	20-49	15-30	NP-7
	7-13	Silty clay loam, stony clay, stony sandy clay loam.	CL, CH, MH	A-6, A-7	10-25	80-100	80-100	75-96	50-85	30-60	11-35
	13-44	Weathered bedrock	---	---	---	---	---	---	---	---	---
ZnC, ZnE--------- Zion	0-10	Silt loam--------	ML, SM, CL, CL-ML	A-4	0-5	85-100	75-100	60-100	45-85	20-34	2-10
	10-22	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	95-100	90-100	85-100	80-95	41-80	20-50
	22-35	Gravelly loam, clay loam, clay.	CH, SC, GC	A-7	0-20	55-95	45-95	40-90	36-85	50-70	30-40
	35-39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.—Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
AkA-------------- Altavista	0-10	10-24	1.30-1.50	2.0-6.0	0.12-0.20	3.5-6.5	Low----------	0.24	5	3	.5-3
	10-39	18-35	1.30-1.50	0.6-2.0	0.12-0.20	3.5-6.0	Low----------	0.24			
	39-60	---	---	---	0.07-0.20	---	-------------	----			
AmB, AmC--------- Appling	0-9	5-20	1.40-1.65	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.24	4	3	.5-2
	9-33	35-60	1.25-1.45	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.28			
	33-41	20-45	1.25-1.45	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28			
	41-60	---	---	---	0.12-0.16	---	-------------	----			
BaC, BaE--------- Badin	0-4	10-27	1.20-1.45	0.6-2.0	0.16-0.20	3.5-6.5	Low----------	0.32	3	5	1-3
	4-23	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.5-5.5	Moderate-----	0.24			
	23-45	---	---	---	---	---	-------------	----			
	45-49	---	---	---	---	---	-------------	----			
Ca--------------- Cartecay	0-9	20-35	1.25-1.45	2.0-6.0	0.12-0.16	5.1-6.5	Low----------	0.32	5	5	2-3
	9-25	8-18	1.30-1.50	2.0-6.0	0.09-0.12	5.1-6.5	Low----------	0.24			
	25-60	2-16	1.30-1.55	6.0-20	0.06-0.09	5.1-6.5	Low----------	0.15			
CeB, CeC--------- Cecil	0-8	5-20	1.30-1.50	2.0-6.0	0.12-0.14	4.5-6.5	Low----------	0.28	4	3	.5-1
	8-16	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	16-55	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	55-60	---	---	---	0.13-0.15	---	-------------	----			
CfC2------------- Cecil	0-3	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-6.5	Low----------	0.28	3	5	.5-1
	3-7	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	7-55	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	55-60	---	---	---	---	---	-------------	----			
CgC*:											
Cecil-----------	0-8	5-20	1.30-1.50	2.0-6.0	0.12-0.14	4.5-6.5	Low----------	0.28	4	3	.5-1
	8-16	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	16-55	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	55-60	---	---	---	---	---	-------------	----			
Urban land.											
Ch--------------- Chewacla	0-6	10-35	1.30-1.60	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.28	5	5	1-4
	6-36	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.32			
	36-45	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-7.8	Low----------	0.32			
	45-60	---	---	---	---	---	-------------	----			
Dp*. Dumps-Pits											
EnB, EnC--------- Enon	0-8	5-20	1.45-1.65	2.0-6.0	0.11-0.15	5.1-6.5	Low----------	0.24	3	3	.5-2
	8-38	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High---------	0.28			
	38-60	---	---	---	0.12-0.16	---	-------------	----			
FrA-------------- Fork	0-9	10-27	1.20-1.50	2.0-6.0	0.14-0.21	4.5-6.0	Low----------	0.37	5	5	1-3
	9-46	18-35	1.30-1.60	0.6-2.0	0.16-0.21	4.5-7.3	Low----------	0.32			
	46-60	2-35	1.20-1.60	0.6-20	0.08-0.22	6.1-7.3	Low----------	0.24			

See footnote at end of table.

Table 15.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
GeB, GeC, GeE----	0-6	5-27	1.20-1.40	0.6-2.0	0.15-0.20	4.5-7.3	Low----------	0.43	4	5	.5-2
Georgeville	6-15	27-35	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.32			
	15-50	35-65	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.28			
	50-60	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low----------	0.32			
GoC2, GoE2-------	0-3	27-35	1.20-1.40	0.6-2.0	0.13-0.18	4.5-7.3	Low----------	0.49	4	6	<.5
Georgeville	3-7	27-35	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.32			
	7-47	35-65	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.28			
	47-60	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low----------	0.32			
GuC*:											
Georgeville-----	0-6	5-27	1.20-1.40	0.6-2.0	0.15-0.20	4.5-7.3	Low----------	0.43	4	5	.5-2
	6-15	27-35	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.32			
	15-50	35-65	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.28			
	50-60	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low----------	0.32			
Urban land.											
HeB, HeC, HeD----	0-11	5-20	1.58-1.62	2.0-6.0	0.10-0.12	3.5-6.5	Low----------	0.24	4	5	.5-2
Helena	11-18	20-35	1.46-1.56	0.2-0.6	0.13-0.15	3.5-5.5	Moderate-----	0.28			
	18-37	35-60	1.44-1.55	0.06-0.2	0.13-0.15	3.5-5.5	High---------	0.28			
	37-60	---	---	---	0.10-0.12	---	-------------	----			
HnB, HnC---------	0-11	5-27	1.20-1.40	0.6-2.0	0.14-0.20	4.5-6.5	Low----------	0.43	5	5	.5-1
Herndon	11-50	35-60	1.30-1.60	0.6-2.0	0.13-0.18	3.6-5.5	Low----------	0.28			
	50-60	10-27	1.20-1.40	0.6-2.0	0.05-0.08	3.6-5.5	Low----------	0.32			
LdB, LdC---------	0-6	10-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28	5	6	.5-2
Lloyd	6-53	35-60	1.30-1.45	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28			
	53-60	7-35	1.45-1.65	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.28			
LeC2, LeE2-------	0-3	10-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28	5	6	.5-2
Lloyd	3-50	35-60	1.30-1.45	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28			
	50-60	7-35	1.45-1.65	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.28			
LxC*:											
Lloyd-----------	0-6	10-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28	5	6	.5-2
	6-53	35-60	1.30-1.45	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28			
	53-60	7-35	1.45-1.65	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.28			
Urban land.											
MaB, MaC, MaE----	0-5	5-20	1.45-1.65	2.0-6.0	0.11-0.15	4.5-6.5	Low----------	0.24	4	5	.5-2
Madison	5-25	30-50	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.32			
	25-37	25-35	1.30-1.40	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.32			
	37-60	5-20	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.0	Low----------	0.37			
MdC2, MdE2-------	0-4	25-35	1.30-1.40	0.6-2.0	0.12-0.16	4.5-6.5	Low----------	0.28	3	6	.5-2
Madison	4-16	30-50	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.32			
	16-30	25-35	1.30-1.40	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.32			
	30-60	5-20	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.0	Low----------	0.37			
MkB, MkC, MkE----	0-8	8-25	1.30-1.50	0.6-2.0	0.14-0.19	5.6-7.3	Low----------	0.24	4	5	.5-2
Mecklenburg	8-27	40-60	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	Moderate-----	0.28			
	27-32	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low----------	0.32			
	32-60	---	---	---	0.10-0.12	---	-------------	----			

See footnote at end of table.

Table 15.—Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
MnC2, MnE2-------Mecklenburg	0-2	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low----------	0.28	3	6	.5-1
	2-22	40-60	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	Moderate-----	0.28			
	22-37	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low----------	0.32			
	37-60	---	---	---	---	---	-------------	----			
PaB, PaC, PaE----Pacolet	0-6	4-15	1.00-1.50	2.0-6.0	0.04-0.08	4.5-6.5	Low----------	0.10	3	3	.5-2
	6-26	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	26-60	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
PcB, PcC, PcE----Pacolet	0-5	8-20	1.00-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.20	3	3	.5-2
	5-24	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	24-60	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
PeC2, PeE2-------Pacolet	0-5	20-35	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.24	2	5	.5-1
	5-18	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	18-37	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	37-60	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
PfE*:											
Pacolet---------	0-5	20-35	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.24	2	5	.5-1
	5-18	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	18-37	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	37-60	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
Udorthents.											
PgB--------------Pageland	0-3	4-24	1.20-1.40	0.6-2.0	0.15-0.22	3.6-5.5	Low----------	0.43	3	5	.5-2
	3-20	18-35	1.20-1.40	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.43			
	20-26	18-45	1.20-1.40	0.2-0.6	0.11-0.18	4.5-6.0	Low----------	0.37			
	26-60	---	---	---	---	---	-------------	----			
Pr*. Pits, quarry											
RaE*:											
Rion------------	0-10	5-20	1.30-1.50	2.0-6.0	0.07-0.11	4.5-6.5	Low----------	0.20	3	---	.5-2
	10-23	18-35	1.30-1.50	0.6-2.0	0.07-0.14	4.5-6.5	Low----------	0.17			
	23-60	2-20	1.30-1.50	2.0-6.0	0.05-0.11	4.5-6.5	Low----------	0.17			
Ashlar----------	0-13	2-10	1.30-1.55	2.0-6.0	0.04-0.06	4.5-6.0	Low----------	0.10	2	2	.5-1
	13-27	5-15	1.30-1.55	2.0-6.0	0.04-0.14	4.5-5.5	Low----------	0.24			
	27-31	---	---	---	---	---	-------------	----			
Wake------------	0-17	3-12	1.65-1.80	6.0-20	0.03-0.08	4.5-6.0	Low----------	0.15	1	2	.5-1
	17-21	---	---	0.00-0.01	---	---	-------------	----			
ReC*:											
Rion------------	0-10	5-20	1.30-1.50	2.0-6.0	0.07-0.11	4.5-6.5	Low----------	0.20	3	---	.5-2
	10-23	18-35	1.30-1.50	0.6-2.0	0.07-0.14	4.5-6.5	Low----------	0.17			
	23-60	2-20	1.30-1.50	2.0-6.0	0.05-0.11	4.5-6.5	Low----------	0.17			
Wateree---------	0-9	2-15	1.40-1.70	2.0-6.0	0.06-0.08	4.5-6.0	Low----------	0.15	3	2	<1
	9-25	5-18	1.30-1.60	2.0-6.0	0.08-0.12	4.5-6.0	Low----------	0.20			
	25-43	---	---	---	---	---	-------------	----			
	43-47	---	---	---	---	---	-------------	----			
Wake------------	0-17	3-12	1.65-1.80	6.0-20	0.03-0.08	4.5-6.0	Low----------	0.15	1	2	.5-1
	17-21	---	---	0.00-0.01	---	---	-------------	----			

See footnote at end of table.

Table 15.—Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
Ro---------------- Roanoke	0-8	10-27	1.20-1.50	0.6-2.0	0.14-0.20	3.5-5.5	Low-----------	0.37	5	5	.5-2
	8-50	35-60	1.35-1.65	0.06-0.2	0.10-0.19	3.5-5.5	Moderate-----	0.24			
	50-60	5-50	1.20-1.50	0.06-20	0.04-0.14	3.5-5.5	Moderate-----	0.24			
Sh---------------- Shellbluff	0-3	10-27	1.20-1.40	0.6-2.0	0.15-0.20	4.5-6.5	Low-----------	0.28	5	5	.5-3
	3-60	18-35	1.20-1.50	0.6-2.0	0.12-0.22	4.5-6.5	Low-----------	0.28			
To---------------- Toccoa	0-7	7-17	1.35-1.45	2.0-6.0	0.09-0.12	5.1-6.5	Low-----------	0.24	5	5	1-2
	7-60	2-19	1.40-1.50	2.0-6.0	0.09-0.12	5.1-6.5	Low-----------	0.20			
Ue. Udorthents, excavated											
Ur. Udorthents, loamy											
WeC, WeE---------- Wedowee	0-7	5-20	1.25-1.60	2.0-6.0	0.10-0.18	3.6-5.5	Low-----------	0.24	4	3	.5-3
	7-11	14-30	1.30-1.55	0.6-2.0	0.12-0.18	3.6-5.5	Low-----------	0.28			
	11-37	35-45	1.30-1.50	0.6-2.0	0.12-0.18	3.6-5.5	Low-----------	0.28			
	37-60	15-30	1.20-1.50	0.6-2.0	0.08-0.15	3.6-5.5	Low-----------	0.28			
Wf---------------- Wehadkee	0-6	5-20	1.35-1.60	2.0-6.0	0.10-0.15	4.5-6.5	Low-----------	0.24	5	3	2-5
	6-30	18-35	1.30-1.50	0.6-2.0	0.16-0.20	4.5-6.5	Low-----------	0.32			
	30-60	---	---	---	0.10-0.15	---	-------------	----			
WhB--------------- Wickham	0-6	8-15	1.45-1.65	2.0-6.0	0.11-0.16	4.5-6.0	Low-----------	0.24	5	3	.5-2
	6-50	18-35	1.30-1.50	0.6-2.0	0.12-0.17	4.5-6.0	Low-----------	0.24			
	50-60	---	---	---	---	---	-------------	----			
WkF--------------- Wilkes	0-7	5-20	1.30-1.50	2.0-6.0	0.11-0.15	5.1-6.5	Low-----------	0.17	2	8	.5-2
	7-13	20-45	1.40-1.60	0.2-0.6	0.15-0.20	5.6-7.8	Moderate-----	0.28			
	13-44	---	---	---	---	---	-------------	----			
ZnC, ZnE---------- Zion	0-10	10-25	1.20-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low-----------	0.37	2	5	.5-2
	10-22	35-60	1.20-1.50	0.06-0.6	0.10-0.19	4.5-7.3	High----------	0.28			
	22-35	35-50	1.30-1.60	0.2-2.0	0.07-0.15	5.1-7.3	High----------	0.17			
	35-39	---	---	0.00-0.01	---	---	-------------	----			

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.—Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
AkA: Altavista	C	Rare	---	---	1.5-2.5	Apparent	Dec-Apr	>60	---	Moderate	Moderate.
AmB, AmC: Appling	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
BaC, BaE: Badin	B	None	---	---	>6.0	---	---	20-40	Soft	High	High.
Ca: Cartecay	C	Frequent	Brief to long.	Dec-Mar	0.5-1.5	Apparent	Jan-Apr	>60	---	Low	Moderate.
CeB, CeC, CfC2: Cecil	B	None	---	---	>6.0	---	---	>60	---	High	High.
CgC*:											
Cecil	B	None	---	---	>6.0	---	---	>60	---	High	High.
Urban land.											
Ch: Chewacla	C	Frequent	Brief to long.	Nov-Apr	0.5-2.0	Apparent	Nov-Apr	>60	---	High	Moderate.
Dp*. Dumps-Pits											
EnB, EnC: Enon	C	None	---	---	>6.0	---	---	>60	---	High	Moderate.
FrA: Fork	C	Occasional	Very brief	Oct-May	1.0-2.0	Apparent	Dec-Mar	>60	---	High	High.
GeB, GeC, GeE, GoC2, GoE2: Georgeville	B	None	---	---	>6.0	---	---	>60	---	High	High.
GuC*:											
Georgeville	B	None	---	---	>6.0	---	---	>60	---	High	High.
Urban land.											
HeB, HeC, HeD: Helena	C	None	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	High	High.
HnB, HnC: Herndon	B	None	---	---	>6.0	---	---	>60	---	High	High.
LdB, LdC, LeC2, LeE2: Lloyd	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.

See footnote at end of table.

Table 16.—Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
LxC*:											
Lloyd------------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land.											
MaB, MaC, MaE, MdC2, MdE2------- Madison	B	None---------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
MkB, MkC, MkE, MnC2, MnE2------- Mecklenburg	C	None---------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
PaB, PaC, PaE, PcB, PcC, PcE, PeC2, PeE2------- Pacolet	B	None---------	---	---	>6.0	---	---	>60	---	High-----	High.
PfE*:											
Pacolet----------	B	None---------	---	---	>6.0	---	---	>60	---	High-----	High.
Udorthents.											
PgB--------------- Pageland	C	None---------	---	---	1.5-3.0	Perched	Dec-Mar	20-40	Soft	Moderate	Moderate.
Pr*. Pits, quarry											
RaE*:											
Rion-------------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	High.
Ashlar-----------	B	None---------	---	---	>6.0	---	---	20-40	Hard	Low------	High.
Wake-------------	D	None---------	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate.
ReC*:											
Rion-------------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	High.
Wateree----------	B	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High.
Wake-------------	D	None---------	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate.
Ro---------------- Roanoke	D	Occasional	Brief-----	Nov-Jun	0-1.0	Apparent	Nov-May	>60	---	High-----	High.
Sh---------------- Shellbluff	B	Occasional	Brief-----	Dec-Apr	3.0-5.0	Apparent	Dec-Apr	>60	---	Moderate	Moderate.
To---------------- Toccoa	B	Occasional	Brief-----	Jan-Dec	2.5-5.0	Apparent	Dec-Apr	>60	---	Low------	Moderate.
Ue. Udorthents, excavated											
Ur. Udorthents, loamy											

See footnote at end of table.

Table 16.—Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
WeC, WeE---------- Wedowee	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
Wf---------------- Wehadkee	D	Frequent----	Long------	Jan-Dec	3.0-0	Apparent	Jan-Dec	>60	---	High-----	Moderate.
WhB--------------- Wickham	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
WkF--------------- Wilkes	C	None--------	---	---	>6.0	---	---	10-20	Soft	Moderate	Moderate.
ZnC, ZnE---------- Zion	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 17.—Classification of the Soils

Soil name	Family or higher taxonomic class
Altavista	Fine-loamy, mixed, semiactive, thermic Aquic Hapludults
Appling	Fine, kaolinitic, thermic Typic Kanhapludults
Ashlar	Coarse-loamy, mixed, semiactive, thermic Typic Dystrochrepts
Badin	Fine, mixed, semiactive, thermic Typic Hapludults
Cartecay	Coarse-loamy, mixed, semiactive, nonacid, thermic Aquic Udifluvents
Cecil	Fine, kaolinitic, thermic Typic Kanhapludults
Chewacla	Fine-loamy, mixed, semiactive, thermic Fluvaquentic Dystrochrepts
Enon	Fine, mixed, active, thermic Ultic Hapludalfs
Fork	Fine-loamy, mixed, semiactive, thermic Aeric Endoaqualfs
Georgeville	Fine, kaolinitic, thermic Typic Hapludults
Helena	Fine, mixed, semiactive, thermic Aquic Hapludults
Herndon	Fine, kaolinitic, thermic Typic Hapludults
Lloyd	Fine, kaolinitic, thermic Rhodic Kanhapludults
Madison	Fine, kaolinitic, thermic Typic Kanhapludults
Mecklenburg	Fine, mixed, active, thermic Ultic Hapludalfs
Pacolet	Fine, kaolinitic, thermic Typic Kanhapludults
Pageland	Fine-silty, siliceous, semiactive, thermic Ultic Hapludalfs
Rion	Fine-loamy, mixed, semiactive, thermic Typic Hapludults
Roanoke	Fine, mixed, semiactive, thermic Typic Endoaquults
Shellbluff	Fine-silty, mixed, semiactive, thermic Fluventic Dystrochrepts
Toccoa	Coarse-loamy, mixed, semiactive, nonacid, thermic Typic Udifluvents
Wake	Mixed, thermic Lithic Udipsamments
Wateree	Coarse-loamy, mixed, semiactive, thermic Typic Dystrochrepts
Wedowee	Fine, kaolinitic, thermic Typic Kanhapludults
Wehadkee	Fine-loamy, mixed, semiactive, nonacid, thermic Typic Fluvaquents
Wickham	Fine-loamy, mixed, semiactive, thermic Typic Hapludults
Wilkes	Loamy, mixed, active, thermic, shallow Typic Hapludalfs
Zion	Fine, mixed, active, thermic Ultic Hapludalfs

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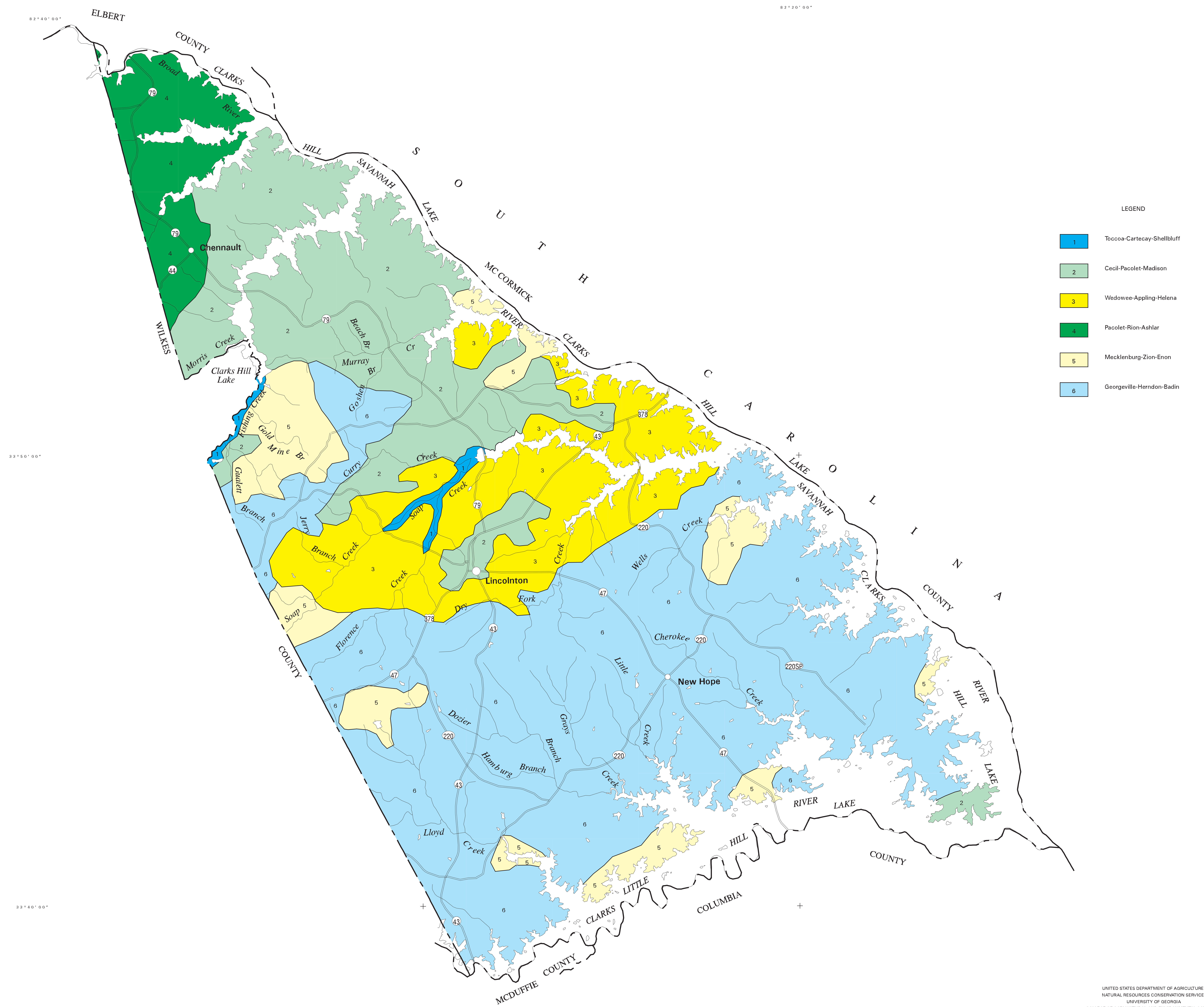


UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
UNIVERSITY OF GEORGIA
COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES
AGRICULTURAL EXPERIMENT STATIONS

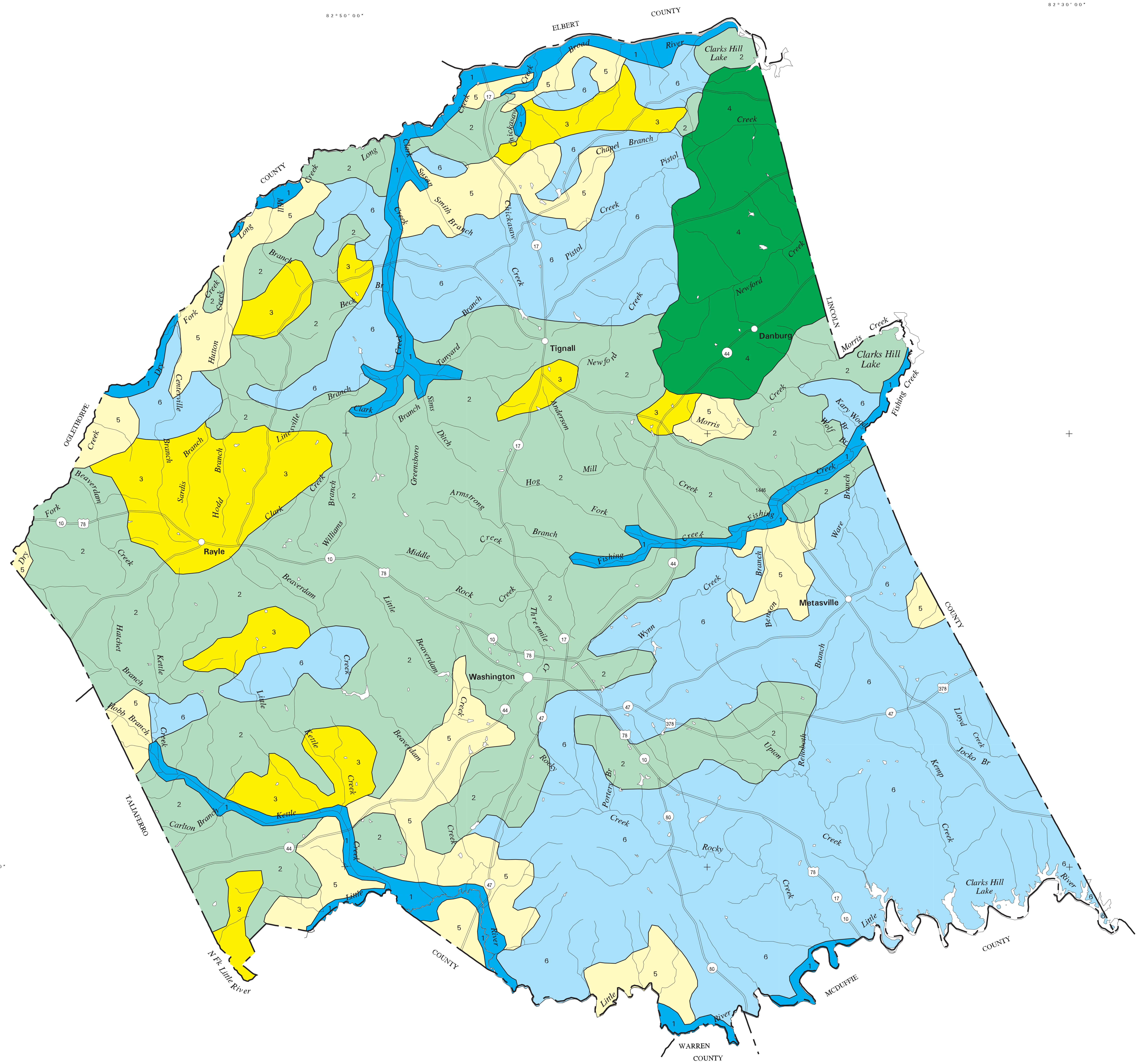
GENERAL SOIL MAP
LINCOLN COUNTY, GEORGIA

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:90000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



LEGEND

1 Toccoa-Cartecay-Shellbluff

2 Cecil-Pacolet-Madison

3 Wedowee-Appling-Helena

4 Pacolet-Rion-Ashlar

5 Mecklenburg-Zion-Enon

6 Georgeville-Herndon-Badin

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COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES
AGRICULTURAL EXPERIMENT STATIONS

GENERAL SOIL MAP
WILKES COUNTY, GEORGIA

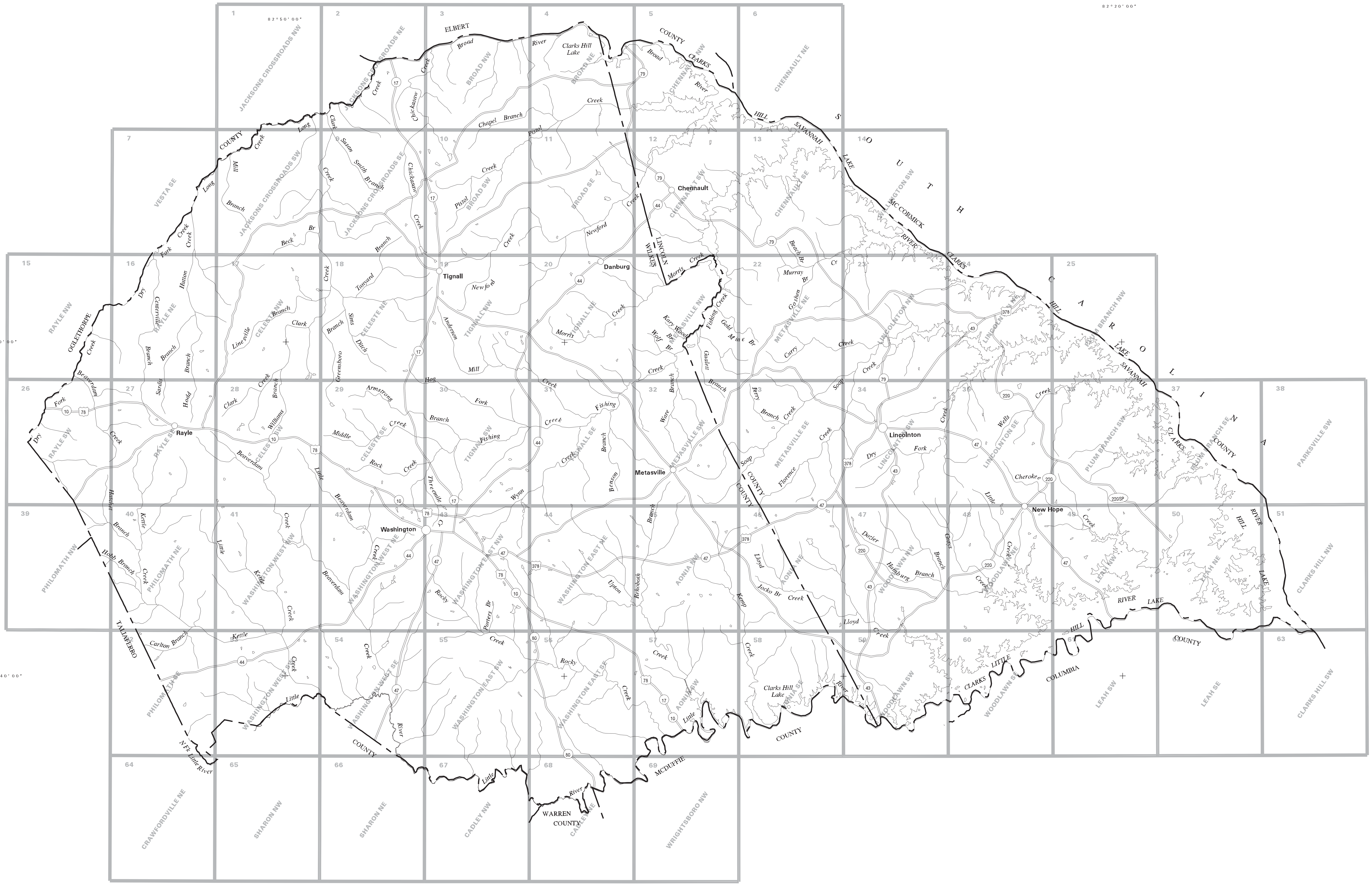
N

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:110000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



INDEX TO MAP SHEETS
LINCOLN AND WILKES COUNTIES, GEORGIA

MILES

KILOMETERS

SCALE = 1:130000

SOIL LEGEND

SYMBOL	NAME
AkA	Altavista sandy loam, 0 to 2 percent slopes, rarely flooded
AmB	Appling sandy loam, 2 to 6 percent slopes
AmC	Appling sandy loam, 6 to 10 percent slopes
BaC	Badin silt loam, 2 to 10 percent slopes
BaE	Badin silt loam, 10 to 25 percent slopes
Ca	Cartecay loam, frequently flooded
CeB	Cecil sandy loam, 2 to 6 percent slopes
CeC	Cecil sandy loam, 6 to 10 percent slopes
CfC2	Cecil sandy clay loam, 6 to 10 percent slopes, eroded
CgC	Cecil-Urban land complex, 2 to 10 percent slopes
Ch	Chewacla loam, frequently flooded
Dp	Dumps-Pits complex
EnB	Enon fine sandy loam, 2 to 6 percent slopes
EnC	Enon fine sandy loam, 6 to 10 percent slopes
FrA	Fork silt loam, 0 to 2 percent slopes, occasionally flooded
GeB	Georgeville silt loam, 2 to 6 percent slopes
GeC	Georgeville silt loam, 6 to 10 percent slopes
GeE	Georgeville silt loam, 10 to 25 percent slopes
GoC2	Georgeville clay loam, 6 to 10 percent slopes, eroded
GoE2	Georgeville clay loam, 10 to 25 percent slopes, eroded
GuC	Georgeville-Urban land complex, 2 to 10 percent slopes
HeB	Helena sandy loam, 2 to 6 percent slopes
HeC	Helena sandy loam, 6 to 10 percent slopes
HeD	Helena sandy loam, 10 to 15 percent slopes
HnB	Herndon very fine sandy loam, 2 to 6 percent slopes
HnC	Herndon very fine sandy loam, 6 to 10 percent slopes
LdB	Lloyd loam, 2 to 6 percent slopes
LdC	Lloyd loam, 6 to 10 percent slopes
LeC2	Lloyd clay loam, 6 to 10 percent slopes, eroded
LeE2	Lloyd clay loam, 10 to 25 percent slopes, eroded
LxC	Lloyd-Urban land complex, 2 to 10 percent slopes
MaB	Madison sandy loam, 2 to 6 percent slopes
MaC	Madison sandy loam, 6 to 10 percent slopes
MaE	Madison sandy loam, 10 to 25 percent slopes
MdC2	Madison sandy clay loam, 6 to 10 percent slopes, eroded
MdE2	Madison sandy clay loam, 10 to 25 percent slopes, eroded
MkB	Mecklenburg sandy loam, 2 to 6 percent slopes
MkC	Mecklenburg sandy loam, 6 to 10 percent slopes
MkE	Mecklenburg sandy loam, 10 to 25 percent slopes
MnC2	Mecklenburg sandy clay loam, 6 to 10 percent slopes, eroded
MnE2	Mecklenburg sandy clay loam, 10 to 25 percent slopes, eroded
PaB	Pacolet fine gravelly loamy coarse sand, 2 to 6 percent slopes
PaC	Pacolet fine gravelly loamy coarse sand, 6 to 10 percent slopes
PaE	Pacolet fine gravelly loamy coarse sand, 10 to 25 percent slopes
PcB	Pacolet sandy loam, 2 to 6 percent slopes
PcC	Pacolet sandy loam, 6 to 10 percent slopes
PcE	Pacolet sandy loam, 10 to 25 percent slopes
PeC2	Pacolet sandy clay loam, 6 to 10 percent slopes, eroded
PeE2	Pacolet sandy clay loam, 10 to 25 percent slopes, eroded
PfE	Pacolet-Udorthents complex, 10 to 25 percent slopes
PgB	Pageland silt loam, 0 to 6 percent slopes
Pr	Pits, quarry
RaE	Rion-Ashlar-Wake complex, 10 to 25 percent slopes
ReC	Rion-Wateree-Wake complex, 2 to 10 percent slopes
Ro	Roanoke silt loam, occasionally flooded
Sh	Shellbluff silt loam, occasionally flooded
To	Toccoa loam, occasionally flooded
Ue	Udorthents, excavated
Ur	Udorthents, loamy
WeC	Wedowee sandy loam, 6 to 10 percent slopes
WeE	Wedowee sandy loam, 10 to 25 percent slopes
Wf	Wehadkee loam, ponded
WhB	Wickham sandy loam, 2 to 6 percent slopes
WkF	Wilkes gravelly loam, 10 to 40 percent slopes, very stony
ZnC	Zion silt loam, 2 to 10 percent slopes
ZnE	Zion silt loam, 10 to 25 percent slopes

FEATURE AND SYMBOL LEGEND FOR SOIL SURVEY

SOIL SURVEY FEATURES

SOIL DELINEATIONS AND SYMBOLS — AmB EnB

Gully

Short steep slope

Borrow pit

Gravelly spot

Rock outcrop

Stony spot

Very stony spot

Wet spot

CULTURAL FEATURES (Optional)

BOUNDARIES

National, state, or province

County or parish

Field sheet matchline & neatline

TRANSPORTATION

RAILROAD (label Only)

ROAD EMBLEMS

Federal — 287, 410/224

State — 52, 52/347

LOCATED OBJECTS

Cemetary

Church

HYDROGRAPHIC FEATURES (Optional)

Drainage end (indicates direction of flow)
Unclassified stream

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
JACKSONS CROSSROADS NW QUADRANGLE
SHEET NUMBER 1 OF 69

82° 52′30″ 82° 48′45″
34° 00′00″ 34° 00′00″

33° 56′15″ 33° 56′15″
82° 52′30″ 82° 48′45″

Joins sheet 2, Jacksons Crossroads NE

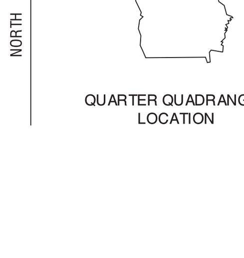
Joins sheet 7, Vesta SE

Joins sheet 8, Jacksons Crossroads SW

Joins sheet 9, Jacksons Crossroads SE

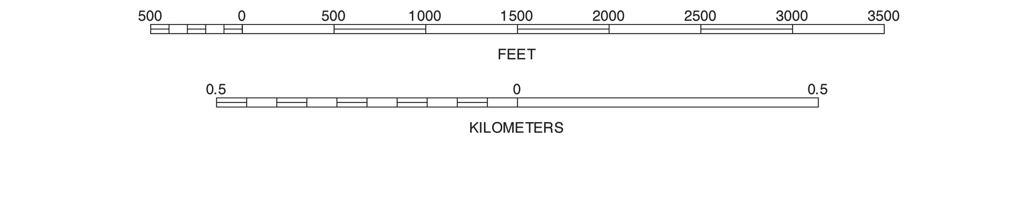
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1993 and 1994 aerial photography. Cultural and hydrography annotation was acquired from the U.S. Department of Interior, Geological Survey.

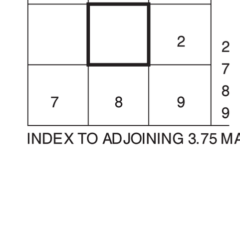
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000





2 JACKSONS CROSSROADS NE
7 VESTA SE
8 JACKSONS CROSSROADS SW
9 JACKSONS CROSSROADS SE

INDEX TO ADJOINING 3.75 MAPS

JACKSONS CROSSROADS NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 1 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
JACKSONS CROSSROADS NE QUADRANGLE
SHEET NUMBER 2 OF 69

82° 48′45″ 82° 45′00″

34° 00′00″ 34° 00′00″

Joins sheet 1, Jacksons Crossroads NW

Joins sheet 3, Broad NW

33° 56′15″ 33° 56′15″

82° 48′45″ 82° 45′00″

Joins sheet 8, Jacksons Crossroads SW

Joins sheet 9, Jacksons Crossroads SE

Joins sheet 10, Broad SW

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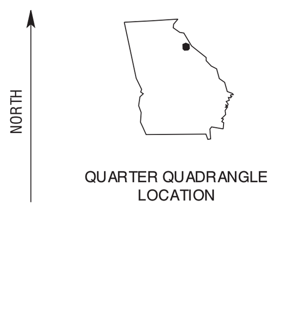
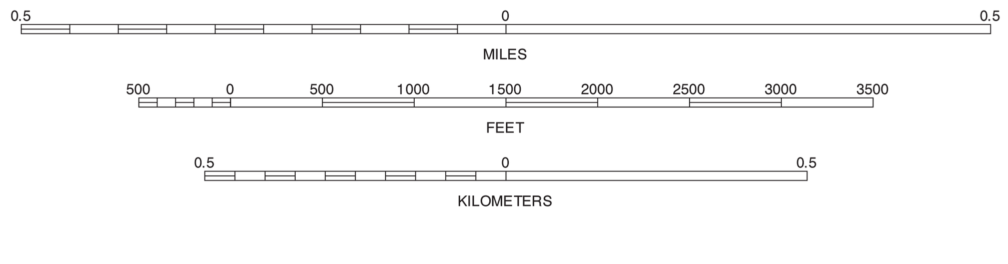
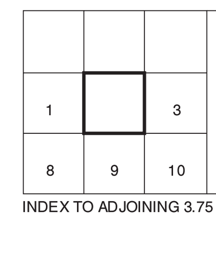
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000





1 JACKSONS CROSSROADS NW
3 BROAD NW
8 JACKSONS CROSSROADS SW
9 JACKSONS CROSSROADS SE
10 BROAD SW

INDEX TO ADJOINING 3.75 MAPS

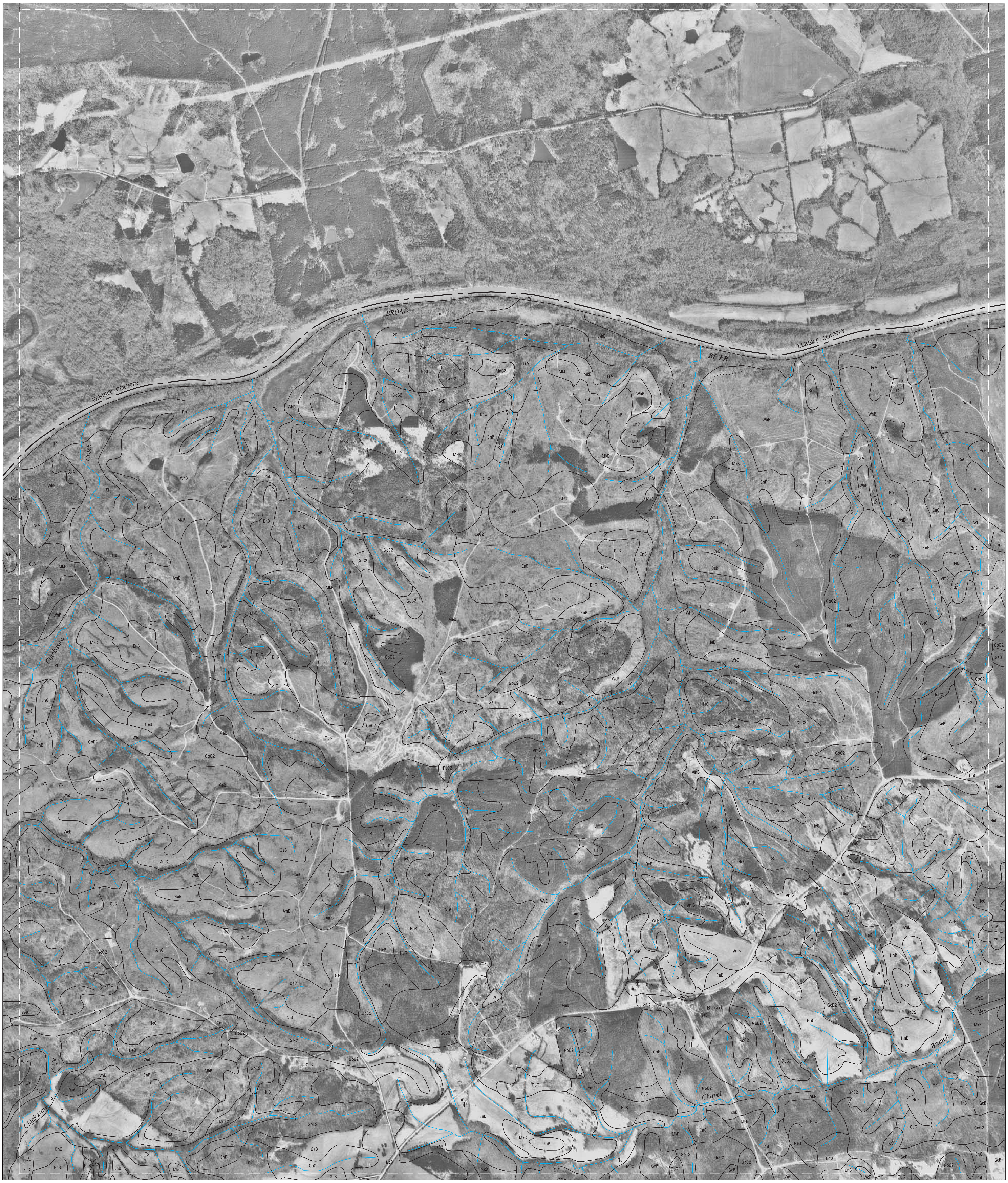
JACKSONS CROSSROADS NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 2 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

82° 45′00″ | 82° 41′15″

34° 00′00″ | 34° 00′00″

Joins sheet 2, Jacksons Crossroads NE



Joins sheet 4, Broad NE

33° 56′15″ | 33° 56′15″

82° 45′00″ | 82° 41′15″

Joins sheet 9, Jacksons Crossroads SE

Joins sheet 10, Broad SW

Joins sheet 11, Broad SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

INDEX TO ADJOINING 3.75 MAPS

2 JACKSONS CROSSROADS NE
4 BROAD NE
9 JACKSONS CROSSROADS SE
10 BROAD SW
11 BROAD SE

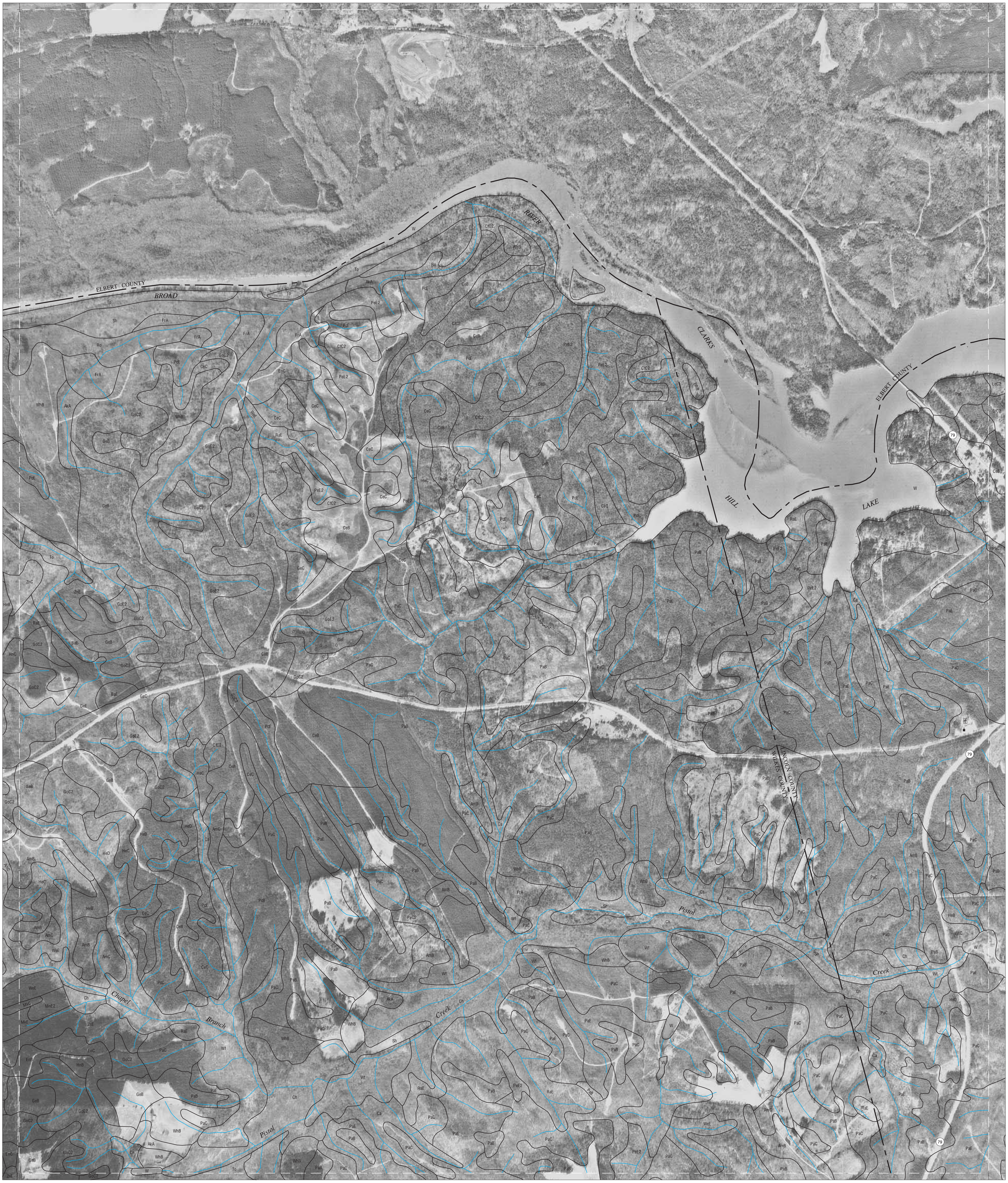
BROAD NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 3 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

82° 41'15" 82° 37'30"

34° 00'00" 34° 00'00"

Joins sheet 3, Broad NW



Joins sheet 5, Chennault NW

33°56'15" 33°56'15"

82° 41'15" 82° 37'30"

Joins sheet 11, Broad SE

Joins sheet 10, Broad SW

Joins sheet 12, Chennault SW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

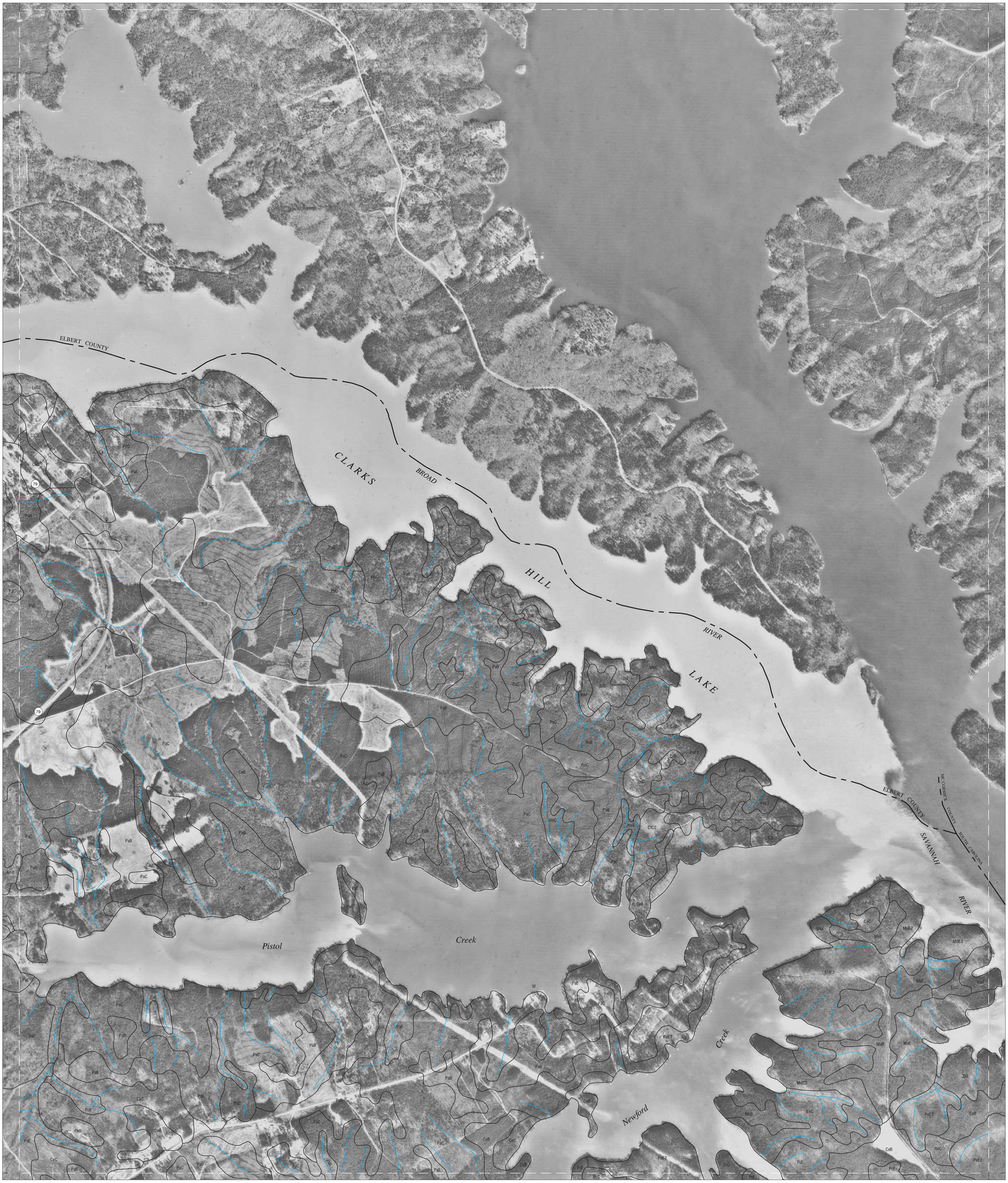
3		5
10	11	12

3 BROAD NW
5 CHENNAULT NW
10 BROAD SW
11 BROAD SE
12 CHENNAULT SW

INDEX TO ADJOINING 3.75 MAPS

BROAD NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 4 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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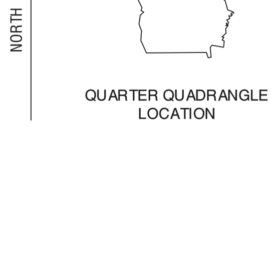
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



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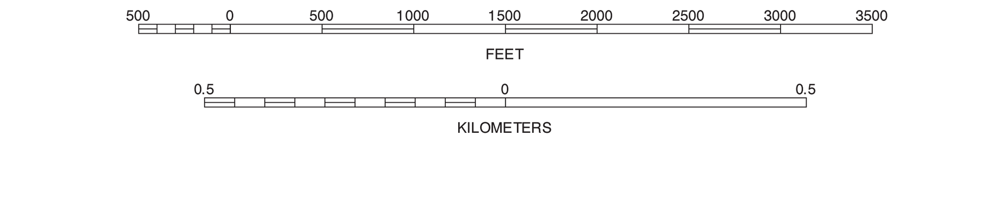

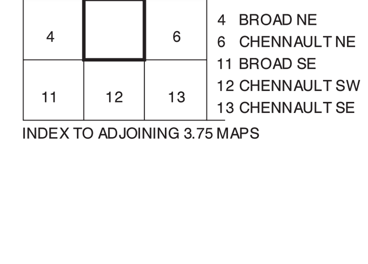

CHENNAULT NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 5 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

82° 33′ 45″

82° 30′ 00″

34° 00′ 00″

34° 00′ 00″

Joins sheet 5, Chennault NW

33° 56′15″

33° 56′15″

82° 33′ 45″

82° 30′ 00″

Joins sheet 12, Chennault SW

Joins sheet 13, Chennault SE

Joins sheet 14, Willington SW

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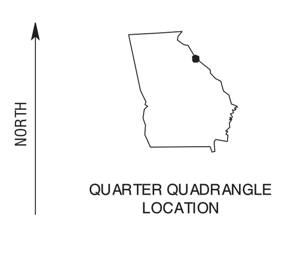
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



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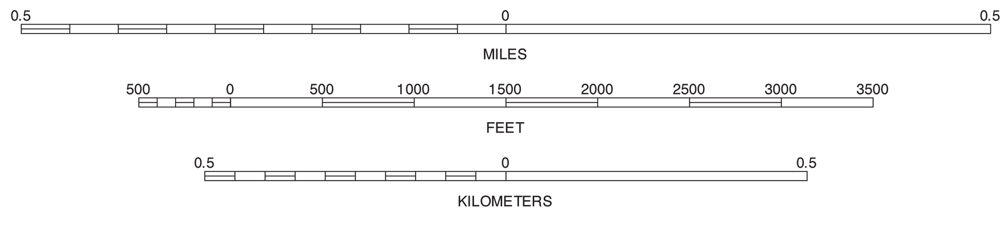
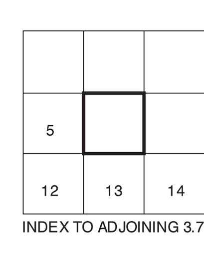




5 CHENNAULT NW
12 CHENNAULT SW
13 CHENNAULT SE
14 WILLINGTON SW

INDEX TO ADJOINING 3.75 MAPS

CHENNAULT NE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 6 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

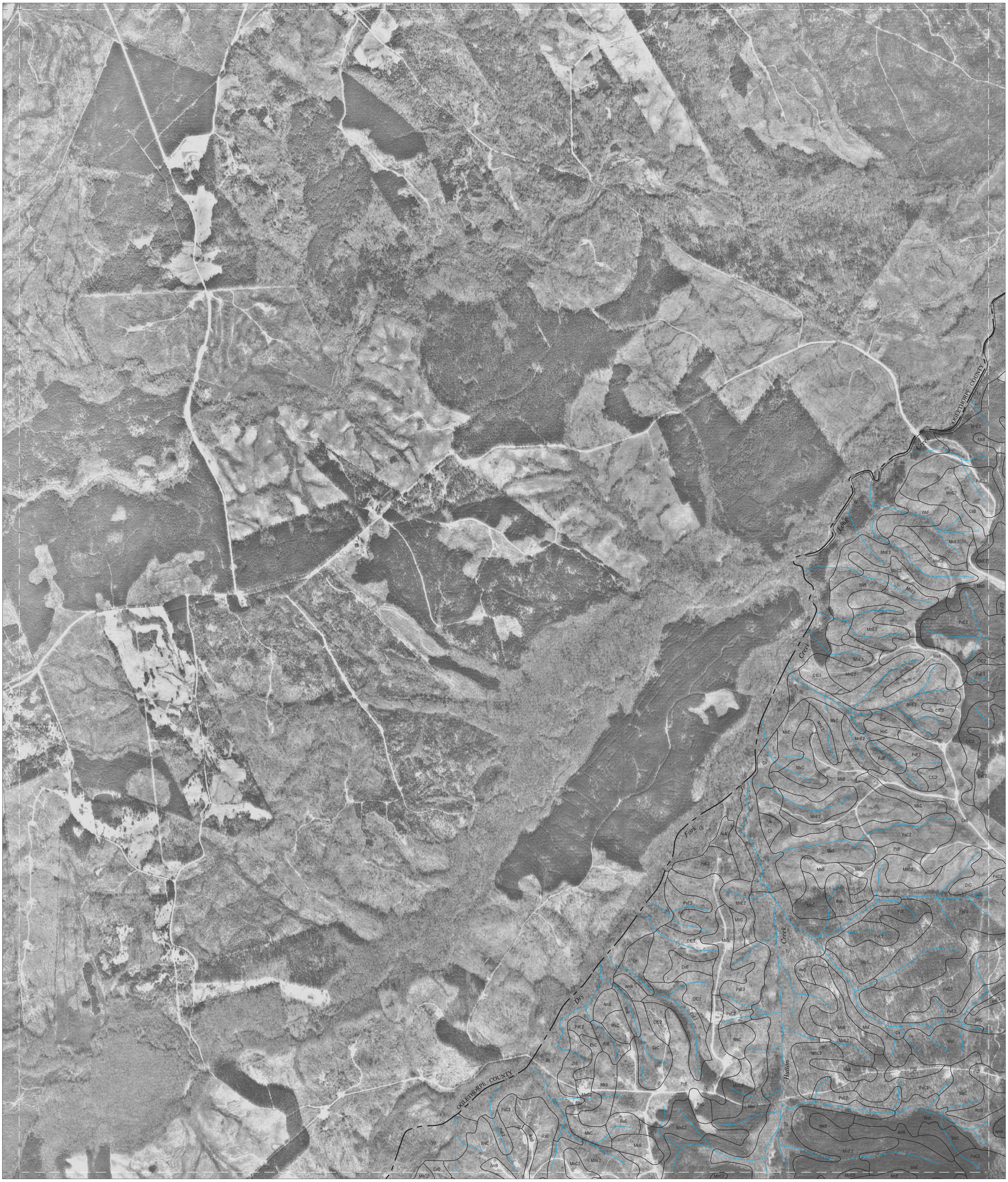
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
VESTA SE QUADRANGLE
SHEET NUMBER 7 OF 69

Joins sheet 1, Jacksons Crossroads NW

82°56'15" 82°52'30"

33°56'15" 33°56'15"



Joins sheet 8, Jacksons Crossroads SW

33°52'30" 33°52'30"

82°56'15" 82°52'30"

Joins sheet 16, Rayle NE

Joins sheet 15, Rayle NW

Joins sheet 17, Celeste NW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1 JACKSONS CROSSROADS NW
8 JACKSONS CROSSROADS SW
15 RAYLE NW
16 RAYLE NE
17 CELESTE NW

INDEX TO ADJOINING 3.75 MAPS

VESTA SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 7 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

82° 52′30″

Joins sheet 1, Jacksons Crossroads NW

Joins sheet 2, Jacksons Crossroads NE

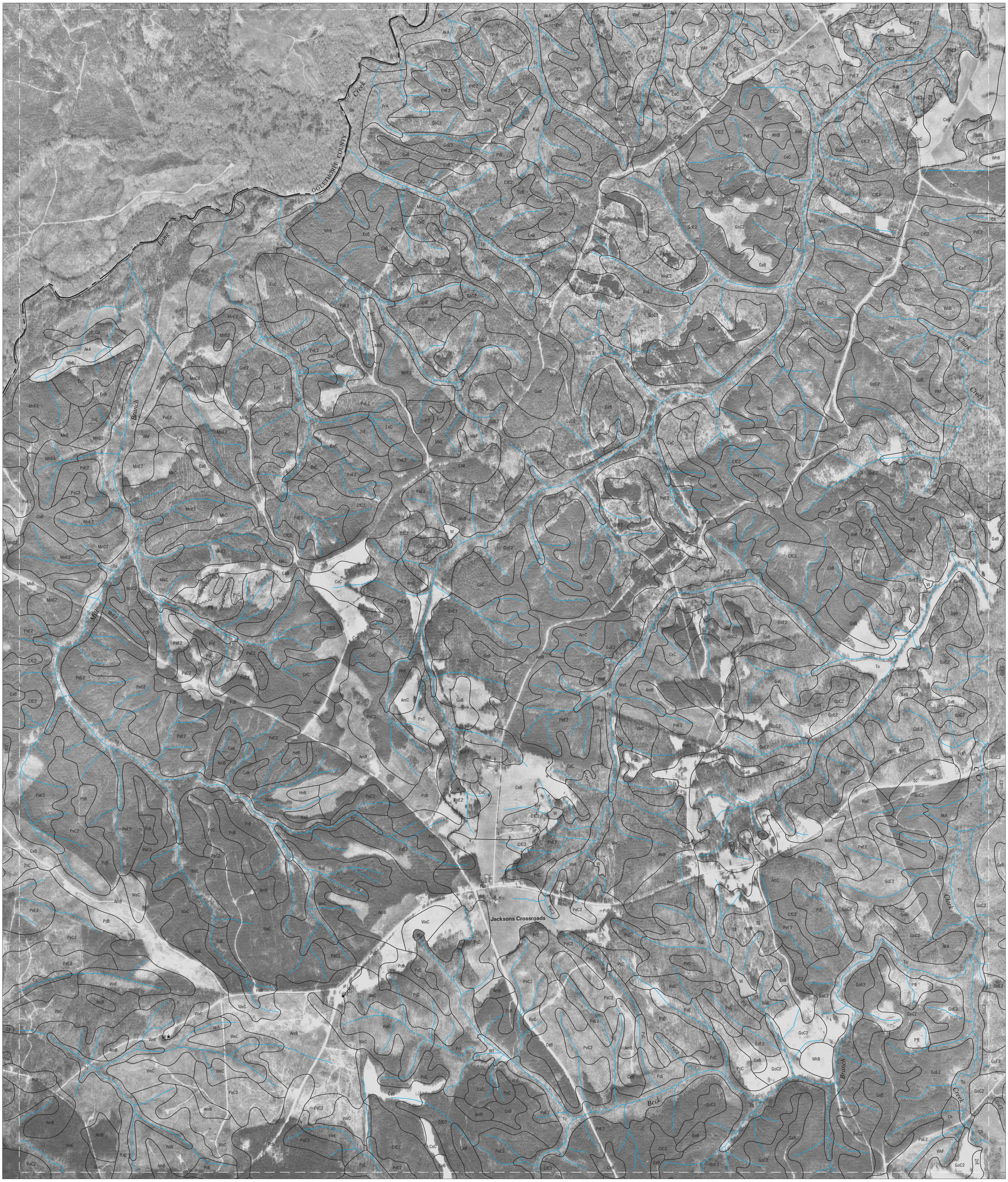
82° 48′45″

33° 56′15″

33° 56′15″

Joins sheet 7, Vesta SE

Joins sheet 9, Jacksons Crossroads SE



33° 52′30″

33° 52′30″

82° 52′30″

82° 48′45″

Joins sheet 16, Rayle NE

Joins sheet 17, Celeste NW

Joins sheet 18, Celeste NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

	1	2
7		9
16	17	18

1 JACKSONS CROSSROADS NW
2 JACKSONS CROSSROADS NE
7 VESTA SE
9 JACKSONS CROSSROADS SE
16 RAYLE NE
17 CELESTE NW
18 CELESTE NE

INDEX TO ADJOINING 3.75 MAPS

JACKSONS CROSSROADS SW, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 8 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

Joins sheet 2, Jacksons Crossroads NE

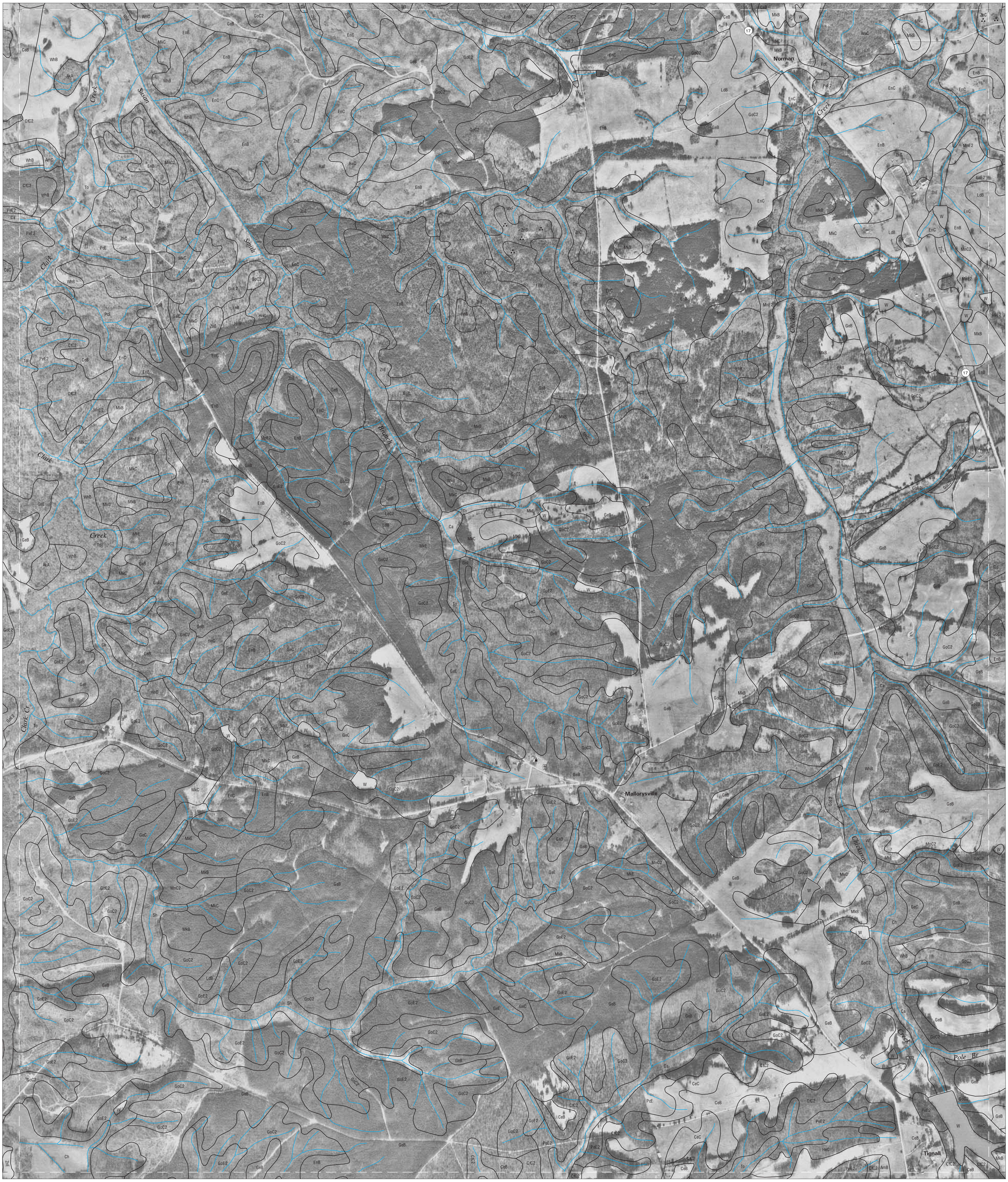
LINCOLN AND WILKES COUNTIES, GEORGIA
JACKSONS CROSSROADS SE QUADRANGLE
SHEET NUMBER 9 OF 69

Joins sheet 3, Broad NW

82° 48′45″ | 82° 45′00″

33°56′15″ | 33°56′15″

Joins sheet 8, Jacksons Crossroads SW



Joins sheet 10, Broad SW

33°52′30″ | 33°52′30″

82° 48′45″ | 82° 45′00″

Joins sheet 17, Celeste NW

Joins sheet 18, Celeste NE

Joins sheet 19, Tignall NW

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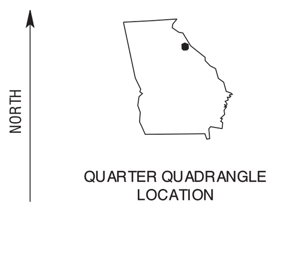
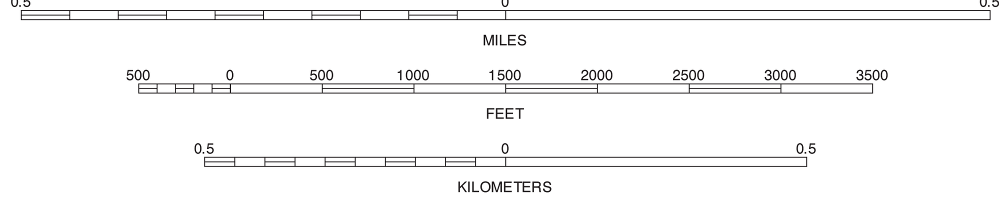
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



SCALE 1:12000



1	2	3
8		10
17	18	19

1 JACKSONS CROSSROADS NW
2 JACKSONS CROSSROADS NE
3 BROAD NW
8 JACKSONS CROSSROADS SW
10 BROAD SW
17 CELESTE NW
18 CELESTE NE
19 TIGNALL NW

INDEX TO ADJOINING 3.75 MAPS

JACKSONS CROSSROADS SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 9 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
BROAD SW QUADRANGLE
SHEET NUMBER 10 OF 69

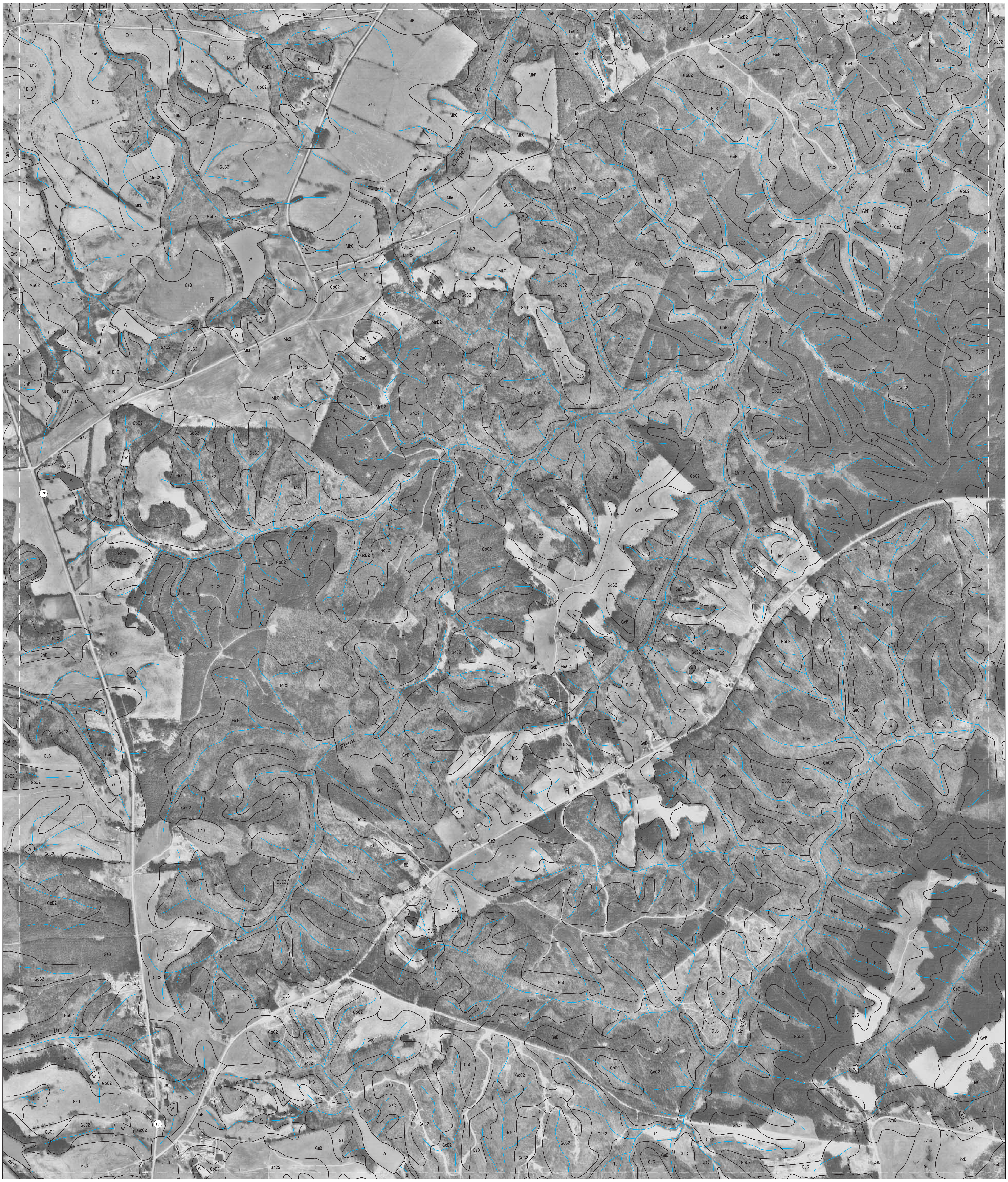
Joins sheet 2, Jacksons Crossroads NE

Joins sheet 3, Broad NW

Joins sheet 4, Broad NE

Joins sheet 9, Jacksons Crossroads SE

Joins sheet 11, Broad SE



Joins sheet 18, Celeste NE

Joins sheet 19, Tignall NW

Joins sheet 20, Tignall NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS: 0.5 — 0 — 0.5

2	3	4
9		11
18	19	20

2 JACKSONS CROSSROADS NE
3 BROAD NW
4 BROAD NE
9 JACKSONS CROSSROADS SE
11 BROAD SE
18 CELESTE NE
19 TIGNALL NW
20 TIGNALL NE

INDEX TO ADJOINING 3.75 MAPS

BROAD SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 10 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

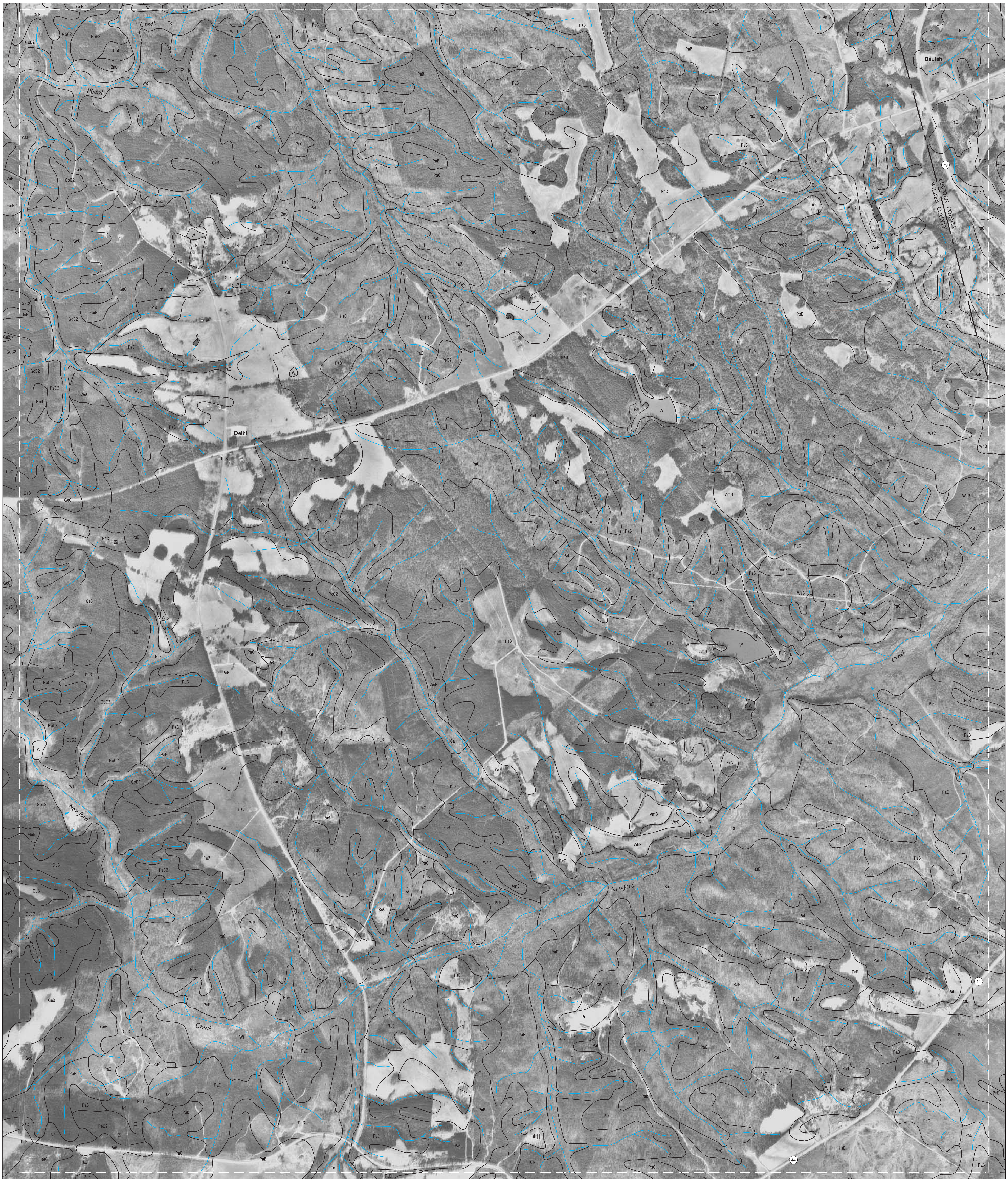
Joins sheet 3, Broad NW

Joins sheet 4, Broad NE

Joins sheet 5, Chennault NW

82° 41′15″ 82° 37′30″

33° 56′15″ 33° 56′15″



Joins sheet 10, Broad SW

Joins sheet 12, Chennault NW

33° 52′30″ 33° 52′30″

82° 41′15″ 82° 37′30″

Joins sheet 19, Tignall NW

Joins sheet 20, Tignall NE

Joins sheet 21, Metasville NW

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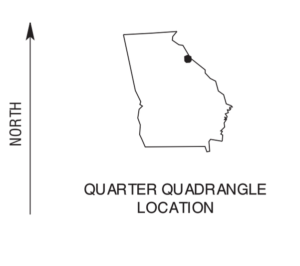
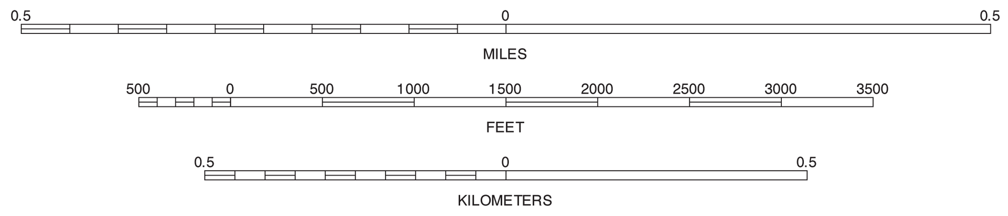
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



3	4	5
10		12
19	20	21

3 BROAD NW
4 BROAD NE
5 CHENNAULT NW
10 BROAD SW
12 CHENNAULT SW
19 TIGNALL NW
20 TIGNALL NE
21 METASVILLE NW

INDEX TO ADJOINING 3.75 MAPS

BROAD SE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 11 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 4, Broad NE

Joins sheet 5, Chennault NW

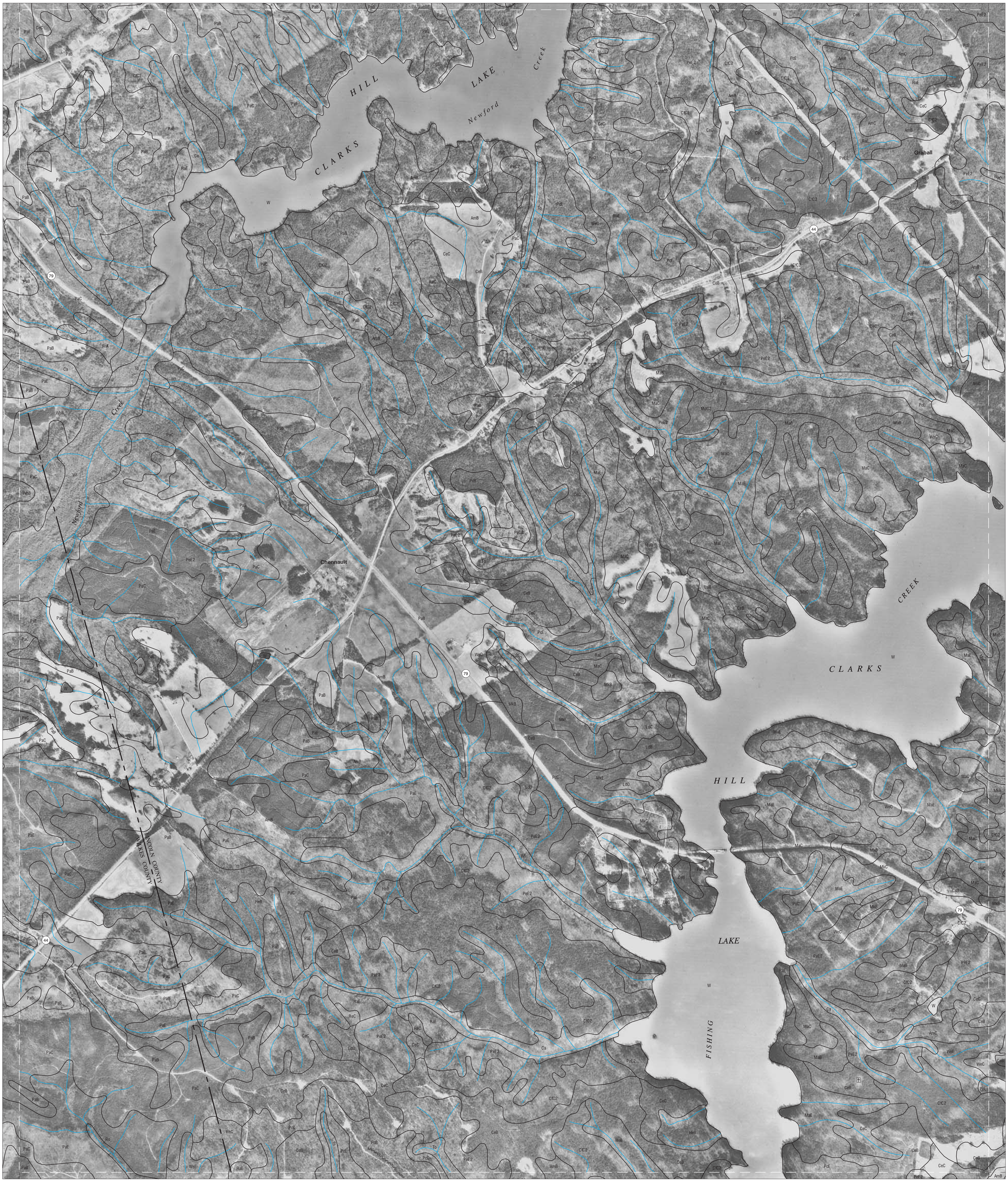
Joins sheet 6, Chennault NE

82° 37′30″ 82° 33′45″

33° 56′15″ 33° 56′15″

Joins sheet 11, Broad SE

Joins sheet 13, Chennault SE



33° 52′30″ 33° 52′30″

82° 37′30″ 82° 33′45″

Joins sheet 20, Tignall NE

Joins sheet 21, Metasville NW

Joins sheet 22, Metasville NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

4	5	6
11		13
20	21	22

4 BROAD NE
5 CHENNAULT NW
6 CHENNAULT NE
11 BROAD SE
13 CHENNAULT SE
20 TIGNALL NE
21 METASVILLE NW
22 METASVILLE NE

INDEX TO ADJOINING 3.75 MAPS

CHENNAULT SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 12 OF 69

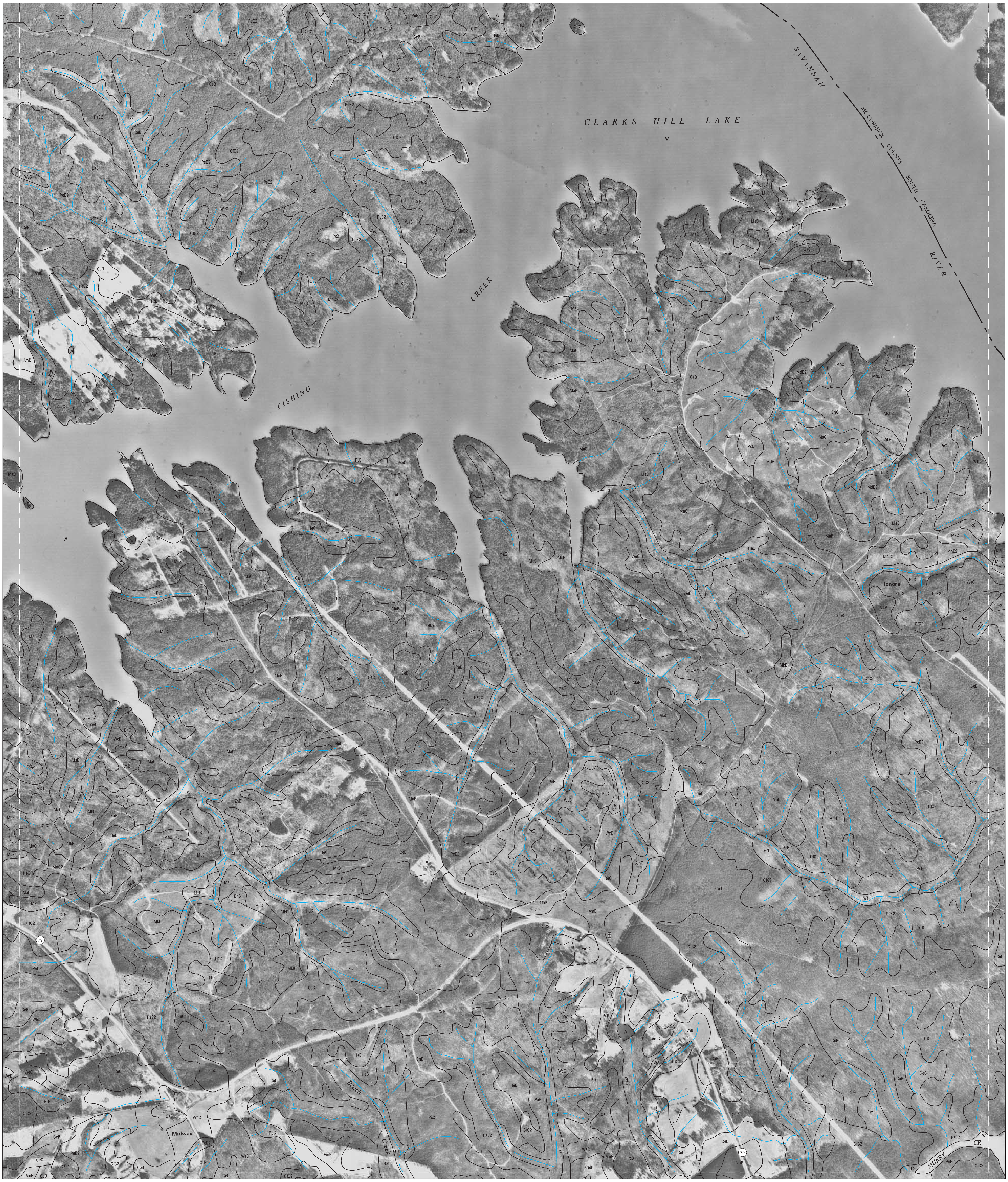
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 5, Chennault NW

Joins sheet 6, Chennault NE

82° 33′ 45″ 82° 30′ 00″

33° 56′15″ 33° 56′15″



Joins sheet 12, Chennault SW

Joins sheet 14, Willington SW

33° 52′30″ 33° 52′30″

82° 33′ 45″ 82° 30′ 00″

Joins sheet 21, Metasville NW

Joins sheet 22, Metasville NE

Joins sheet 23, Lincolnton NW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

5	6	
12		14
21	22	23

5 CHENNAULT NW
6 CHENNAULT NE
12 CHENNAULT SW
14 WILLINGTON SW
21 METASVILLE NW
22 METASVILLE NE
23 LINCOLNTON NW

INDEX TO ADJOINING 3.75 MAPS

CHENNAULT SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 13 OF 69

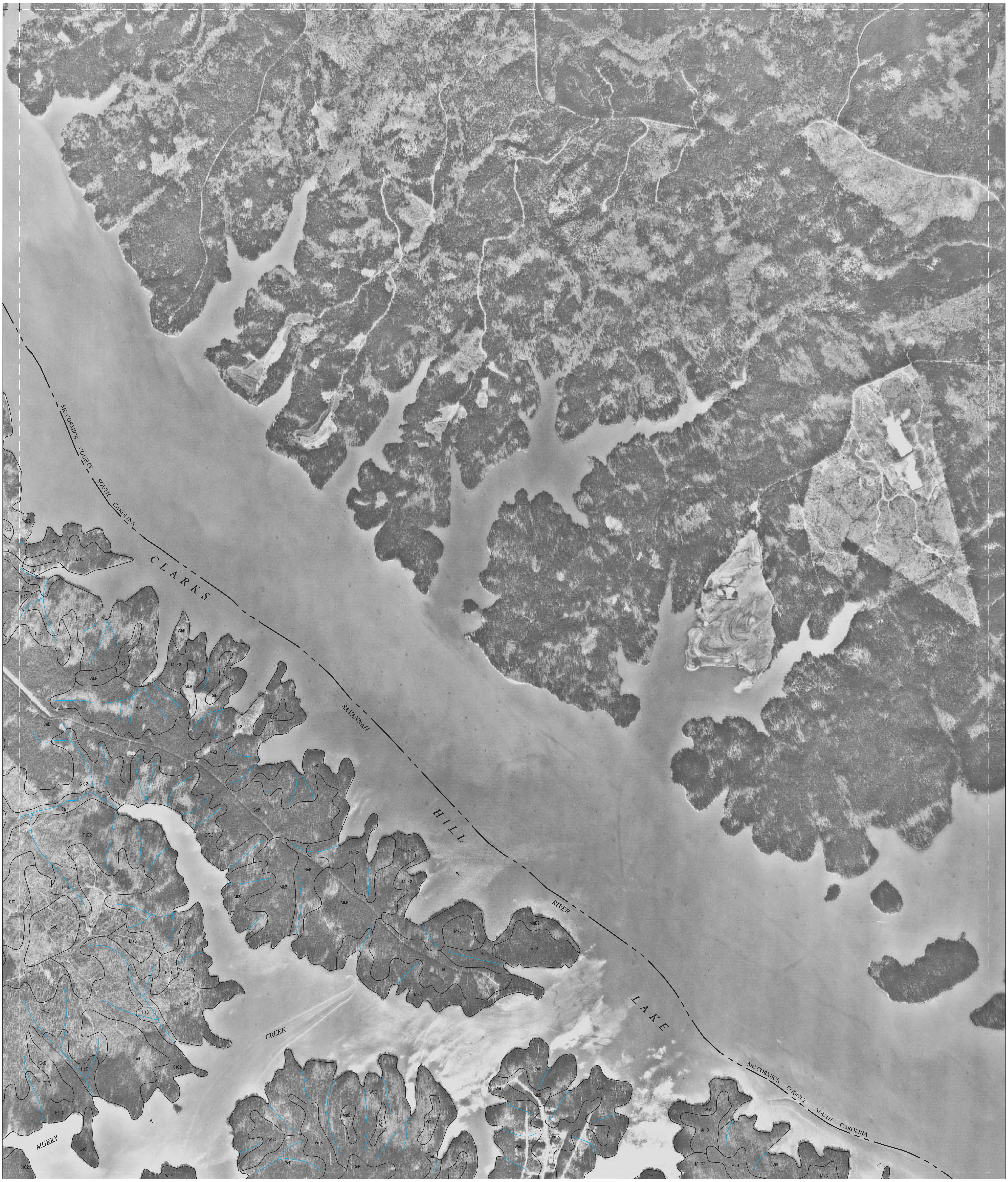
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 6, Chennault NE

82° 30′00″ 82° 26′15″

33°56′15″ 33°56′15″

Joins sheet 13, Chennault SE



33°52′30″ 33°52′30″

82° 30′00″ 82° 26′15″

Joins sheet 23, Lincolnton NW

Joins sheet 22, Metasville NE

Joins sheet 24, Lincolnton NE

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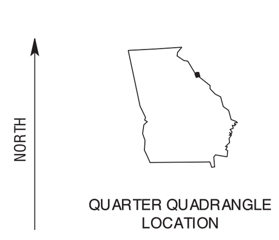
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

6		
13		
22	23	24

6 CHENNAULT NE
13 CHENNAULT SE
22 METASVILLE NE
23 LINCOLNTON NW
24 LINCOLNTON NE

INDEX TO ADJOINING 3.75 MAPS

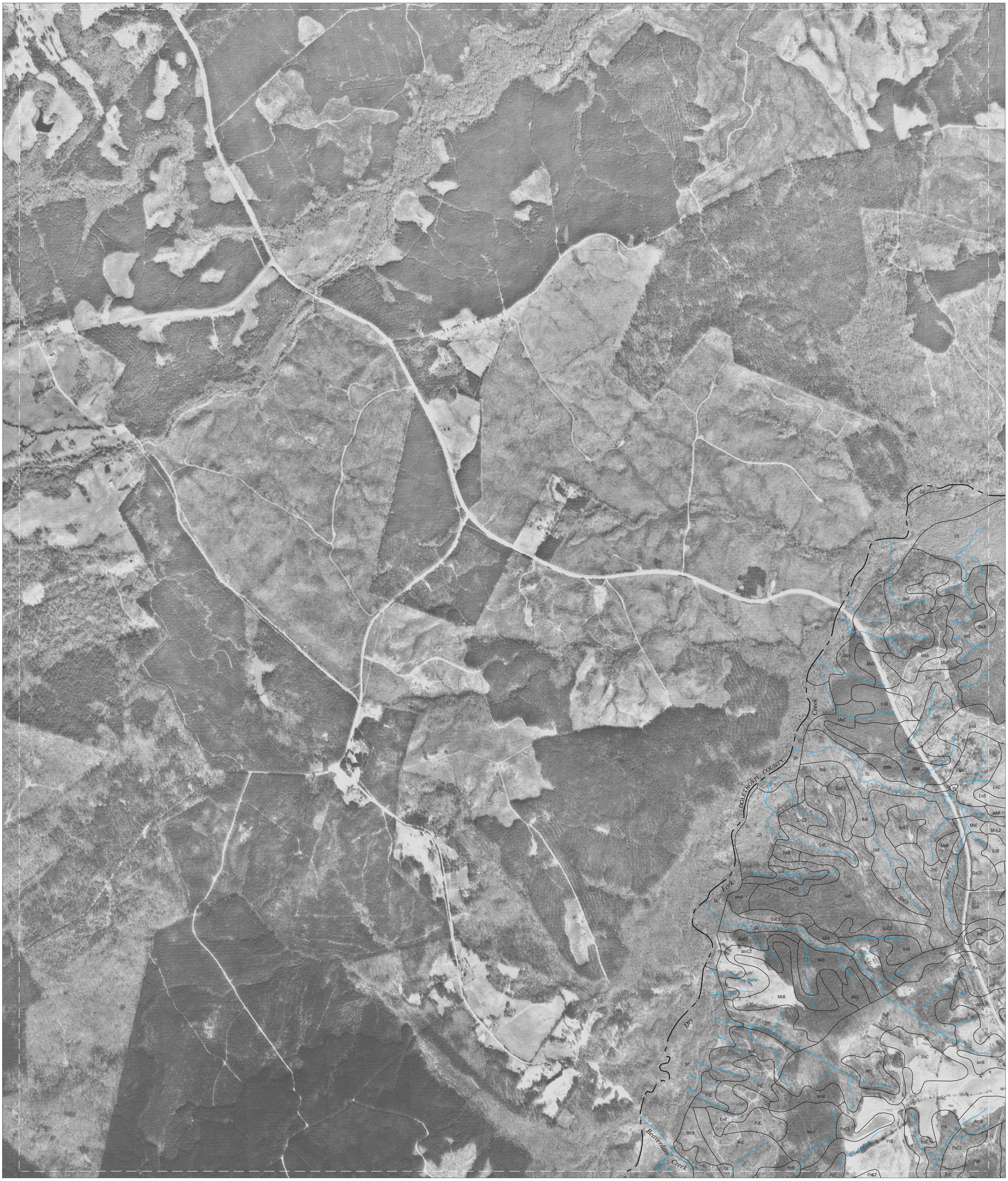
WILLINGTON SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 14 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 7, Vesta SE

83° 00′00″ 82° 56′15″

33° 52′30″ 33° 52′30″



33° 48′45″ 33° 48′45″

83° 00′00″ 82° 56′15″

Joins sheet 16, Rayle NE

Joins sheet 26, Rayle SW

Joins sheet 27, Rayle SE

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

NORTH

QUADRANGLE LOCATION

		7	7 VESTA SE
	■	16	16 RAYLE NE
	26	27	26 RAYLE SW 27 RAYLE SE

INDEX TO ADJOINING 3.75 MAPS

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

RAYLE NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 15 OF 69

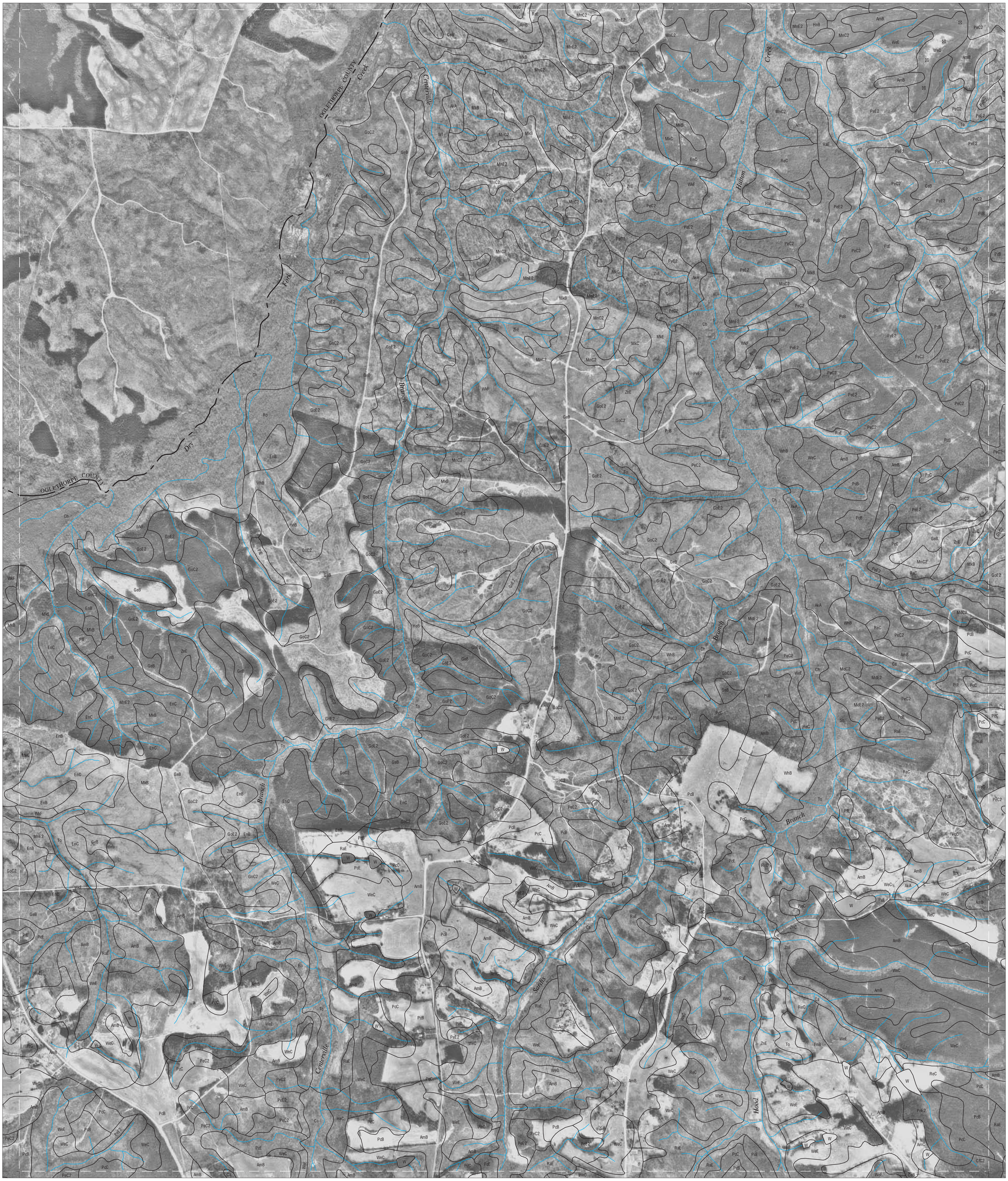
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 7, Vesta SE

Joins sheet 8, Jacksons Crossroads SW

82°56′15″ 33°52′30″ 82°52′30″ 33°52′30″

Joins sheet 15, Rayle NW



Joins sheet 17, Celeste NW

33°48′45″ 82°56′15″ 33°48′45″ 82°52′30″

Joins sheet 27, Rayle SE

Joins sheet 26, Rayle SW

Joins sheet 28, Celeste SW

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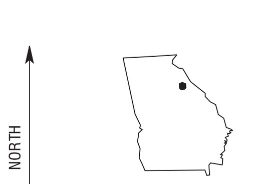
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

	7	8
15		17
26	27	28

7 VESTA SE
8 JACKSONS CROSSROADS SW
15 RAYLE NW
17 CELESTE NW
26 RAYLE SW
27 RAYLE SE
28 CELESTE SW

INDEX TO ADJOINING 3.75 MAPS

RAYLE NE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 16 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

82° 52′30″

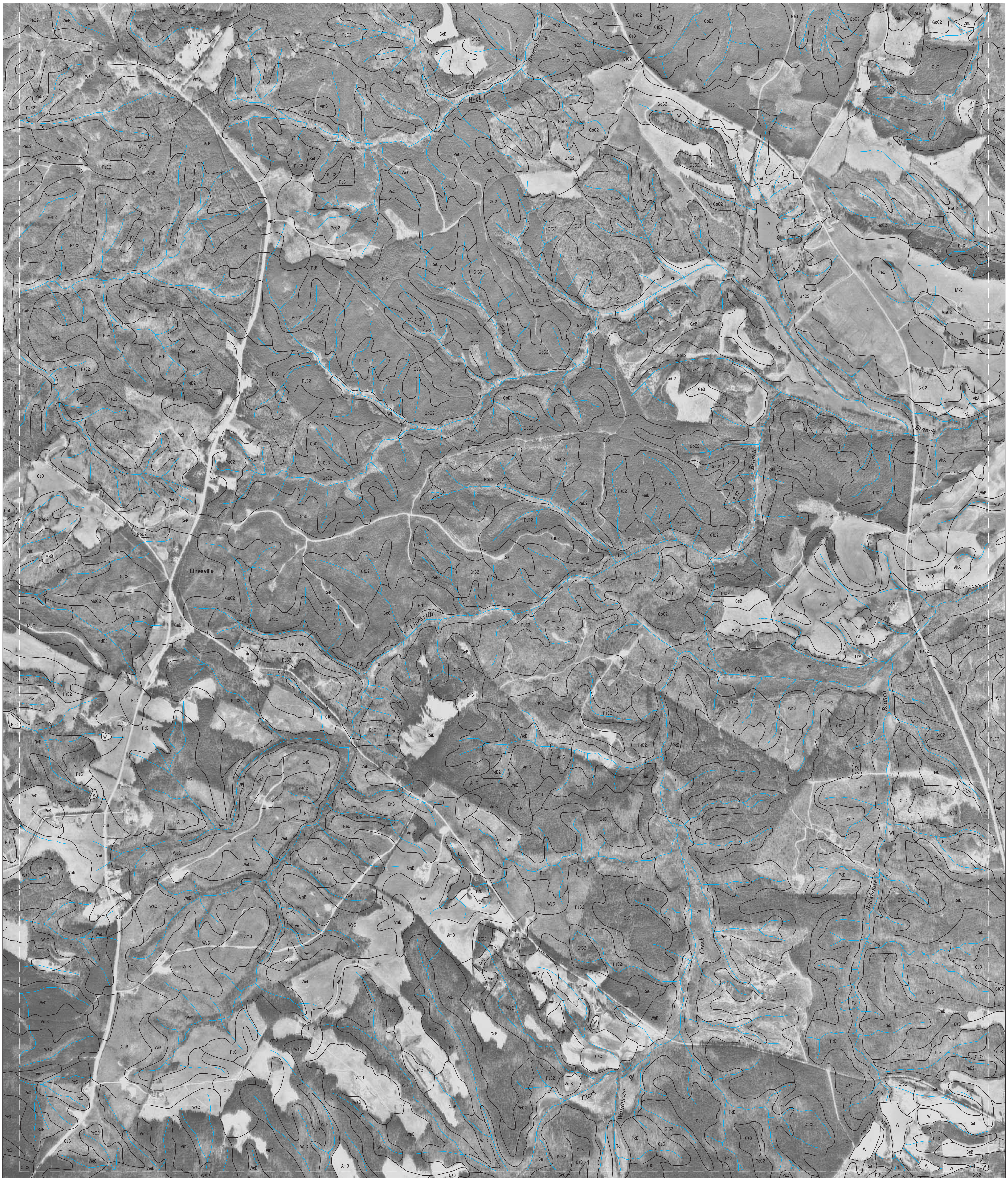
Joins sheet 8, Jacksons Crossroads SW

82° 48′45″

33° 52′30″

33° 52′30″

Joins sheet 16, Rayle NE



Joins sheet 18, Celeste NE

33° 48′45″

33° 48′45″

82° 52′30″

82° 48′45″

Joins sheet 27, Rayle SE

Joins sheet 28, Celeste SW

Joins sheet 29, Celeste SE

SCALE 1:12000

MILES

FEET

KILOMETERS

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

7	8	9
16		18
27	28	29

7 VESTA SE
8 JACKSONS CROSSROADS SW
9 JACKSONS CROSSROADS SE
16 RAYLE NE
18 CELESTE NE
27 RAYLE SE
28 CELESTE SW
29 CELESTE SE

INDEX TO ADJOINING 3.75 MAPS

CELESTE NW, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 17 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 8, Jacksons Crossroads SW

Joins sheet 9, Jacksons Crossroads SE

Joins sheet 10, Broad SW

82° 48′45″

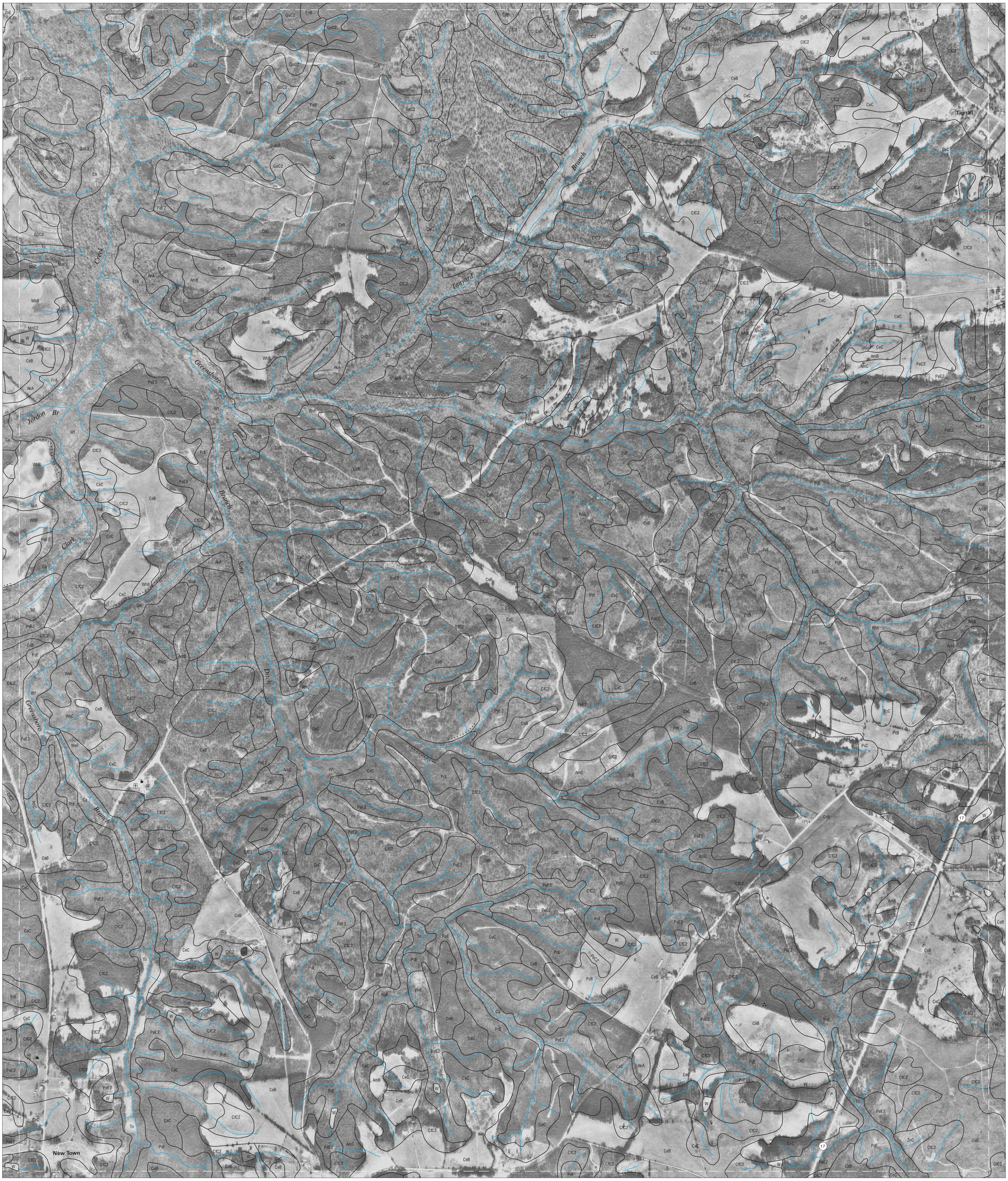
82° 45′00″

33° 52′30″

33° 52′30″

Joins sheet 17, Celeste NW

Joins sheet 19, Tignall NW



33° 48′45″

33° 48′45″

82° 48′45″

82° 45′00″

Joins sheet 28, Celeste SW

Joins sheet 29, Celeste SE

Joins sheet 30, Tignall SW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

8	9	10
17		19
28	29	30

8 JACKSONS CROSSROADS SW
9 JACKSONS CROSSROADS SE
10 BROAD SW
17 CELESTE NW
19 TIGNALL NW
28 CELESTE SW
29 CELESTE SE
30 TIGNALL SW

INDEX TO ADJOINING 3.75 MAPS

CELESTE NE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 18 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 9, Jacksons Crossroads SE

Joins sheet 10, Broad SW

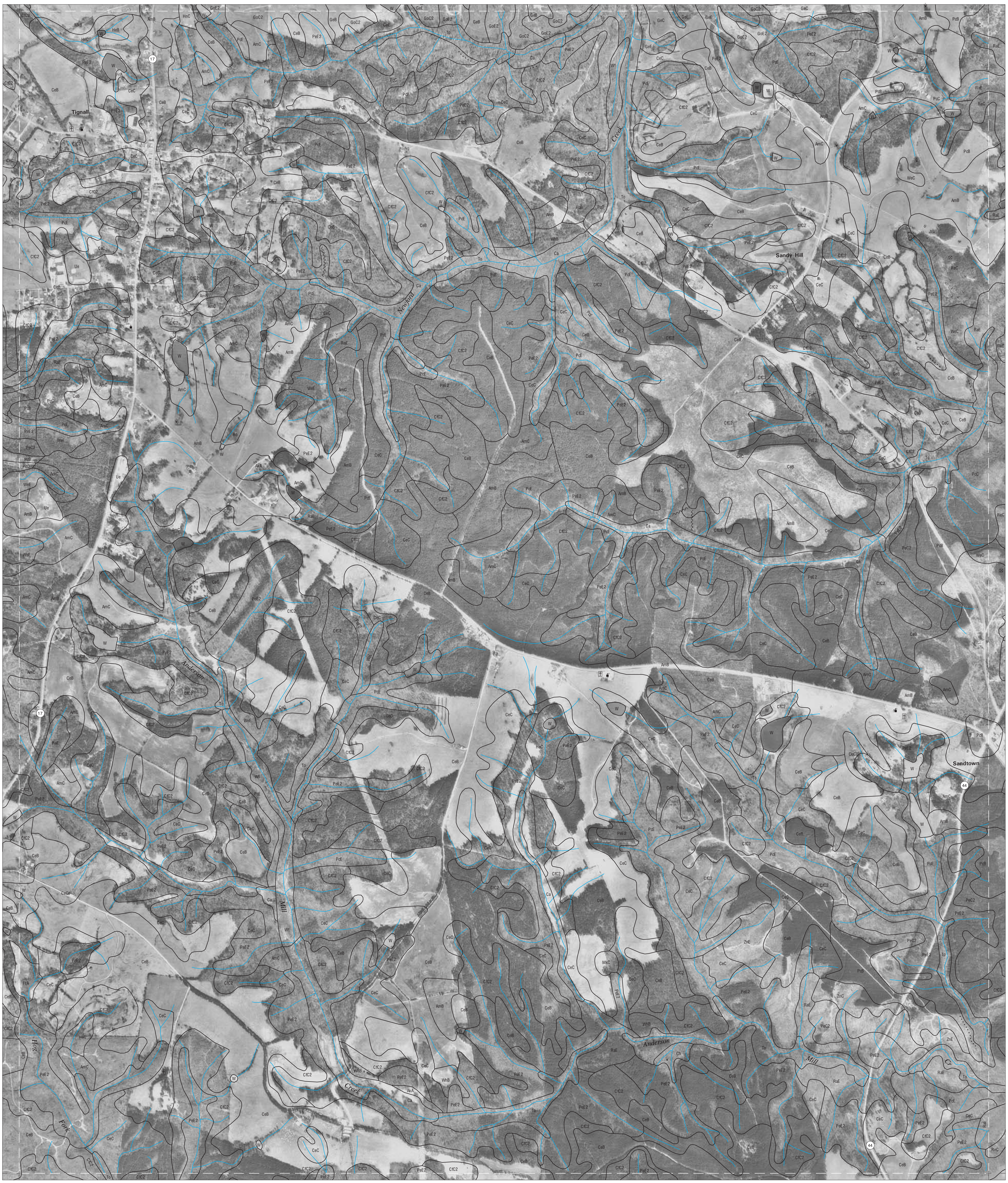
Joins sheet 11, Broad SE

82° 45′00″ 82° 41′15″

33° 52′30″ 33° 52′30″

Joins sheet 18, Celeste NE

Joins sheet 20, Tignall NE



33° 48′45″ 33° 48′45″

82° 45′00″ 82° 41′15″

Joins sheet 29, Celeste SE

Joins sheet 30, Tignall SW

Joins sheet 31, Tignall SE

SCALE 1:12000

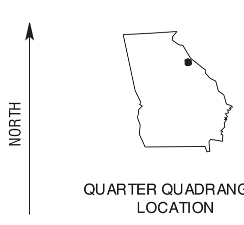
0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1993 and 1994 aerial photography. Cultural and hydrography annotation was acquired from the U.S. Department of Interior, Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

9	10	11	
18		20	
29	30	31	

9 JACKSONS CROSSROADS SE
10 BROAD SW
11 BROAD SE
18 CELESTE NE
20 TIGNALL NE
29 CELESTE SE
30 TIGNALL SW
31 TIGNALL SE

INDEX TO ADJOINING 3.75 MAPS

TIGNALL NW, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 19 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
TIGNALL NE QUADRANGLE
SHEET NUMBER 20 OF 69

Joins sheet 10, Broad SW

Joins sheet 11, Broad SE

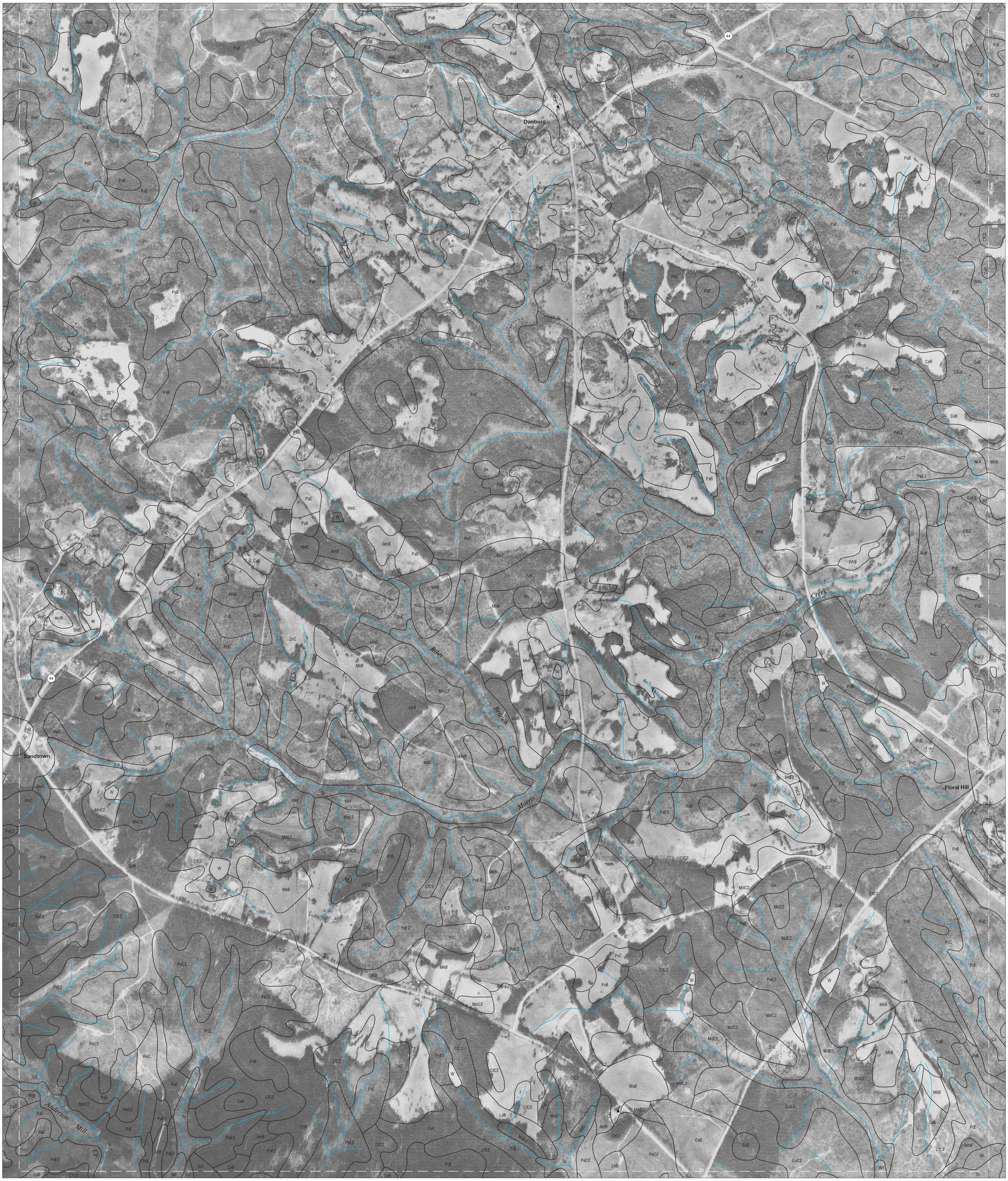
Joins sheet 12, Chennault SW

82° 41′15″ 33° 52′30″

82° 37′30″ 33° 52′30″

Joins sheet 19, Tignall NW

Joins sheet 21, Metasville NW



33° 48′45″ 82° 41′15″

33° 48′45″ 82° 37′30″

Joins sheet 30, Tignall SW

Joins sheet 31, Tignall SE

Joins sheet 32, Metasville SW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

10	11	12
19		21
30	31	32

10 BROAD SW
11 BROAD SE
12 CHENNAULT SW
19 TIGNALL NW
21 METASVILLE NW
30 TIGNALL SW
31 TIGNALL SE
32 METASVILLE SW

INDEX TO ADJOINING 3.75 MAPS

TIGNALL NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 20 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 11, Broad SE

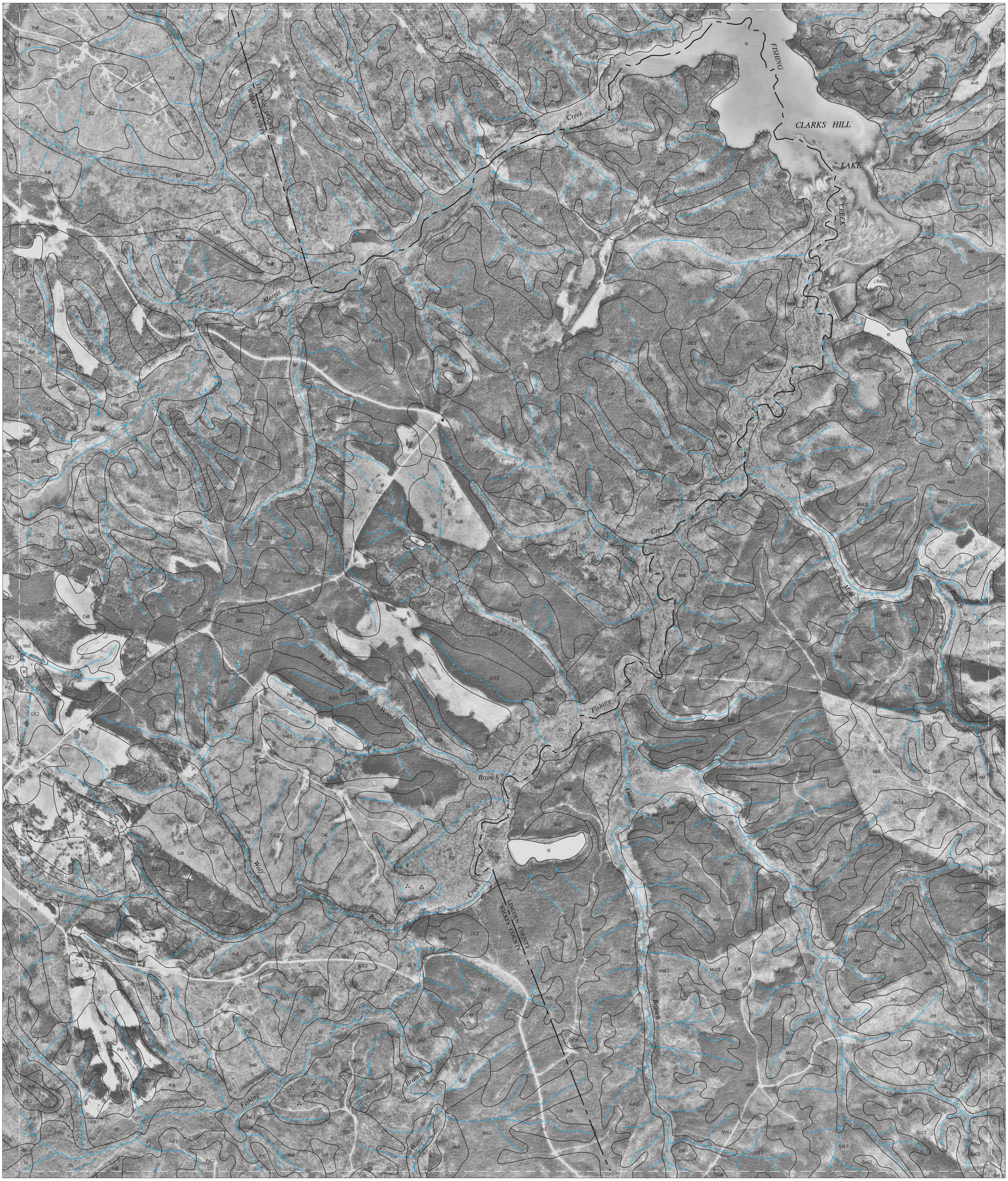
Joins sheet 12, Chennault SW

Joins sheet 13, Chennault SE

82° 37′30″

82° 33′45″

33° 52′30″



Joins sheet 20, Tignall NE

Joins sheet 22, Metasville NE

33° 48′45″

82° 37′30″

82° 33′45″

Joins sheet 32, Metasville SW

Joins sheet 31, Tignall SE

Joins sheet 33, Metasville SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

11	12	13
20		22
31	32	33

11 BROAD SE
12 CHENNAULT SW
13 CHENNAULT SE
20 TIGNALL NE
22 METASVILLE NE
31 TIGNALL SE
32 METASVILLE SW
33 METASVILLE SE

INDEX TO ADJOINING 3.75 MAPS

METASVILLE NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 21 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
METASVILLE NE QUADRANGLE
SHEET NUMBER 22 OF 69

Joins sheet 12, Chennault SW

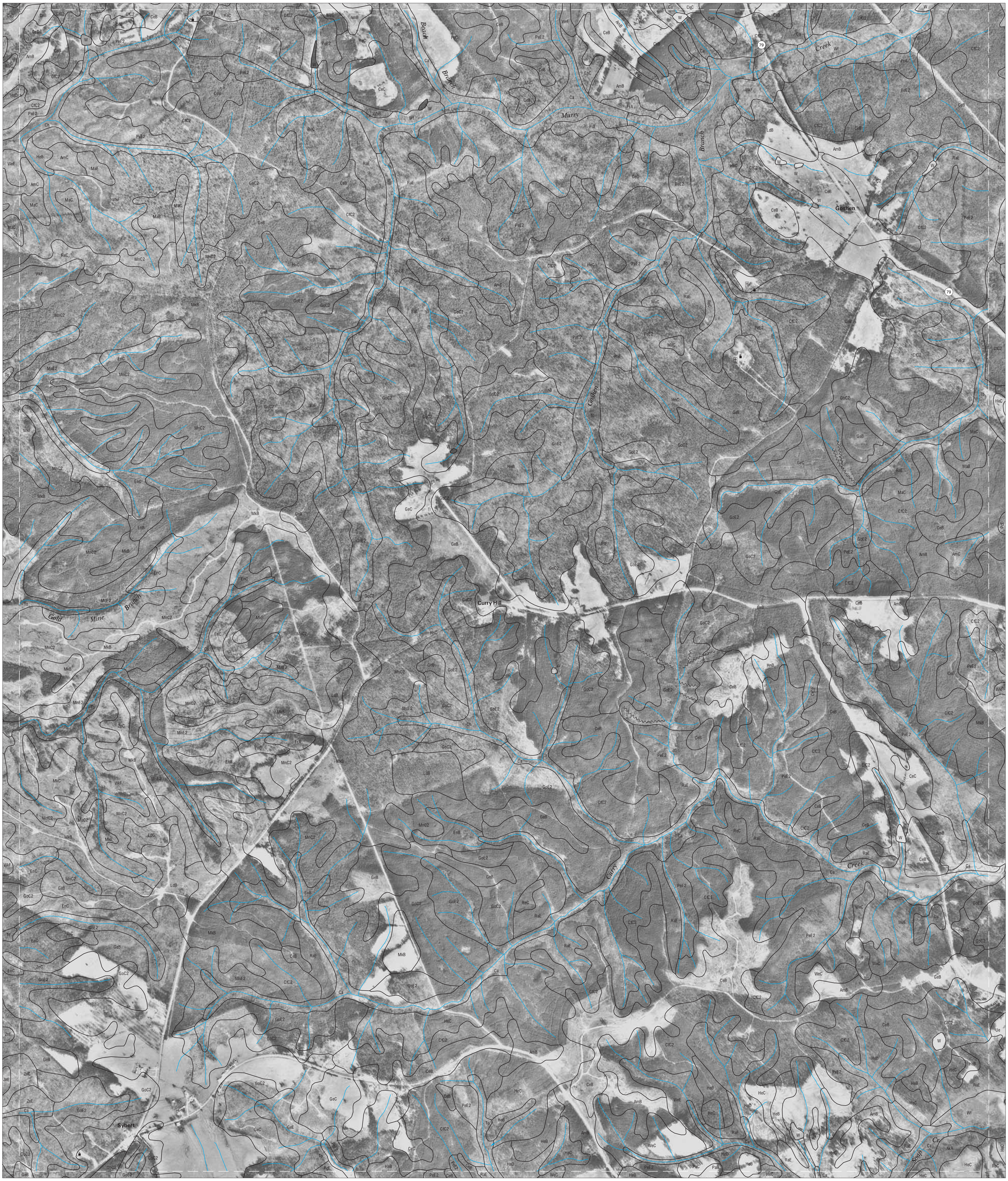
Joins sheet 13, Chennault SE

Joins sheet 14, Willington SW

82° 33′ 45″ 33° 52′ 30″

82° 30′ 00″ 33° 52′ 30″

Joins sheet 21, Metasville NW



Joins sheet 23, Lincolnton NW

33° 48′ 45″ 82° 33′ 45″

33° 48′ 45″ 82° 30′ 00″

Joins sheet 32, Metasville SE

Joins sheet 33, Metasville SE

Joins sheet 34, Lincolnton SW

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1993 and 1994 aerial photography. Cultural and hydrography annotation was acquired from the U.S. Department of Interior, Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

12	13	14
21		23
32	33	34

12 CHENNAULT SW
13 CHENNAULT SE
14 WILLINGTON SW
21 METASVILLE NW
23 LINCOLNTON NW
32 METASVILLE SW
33 METASVILLE SE
34 LINCOLNTON SW

INDEX TO ADJOINING 3.75 MAPS

METASVILLE NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 22 OF 69

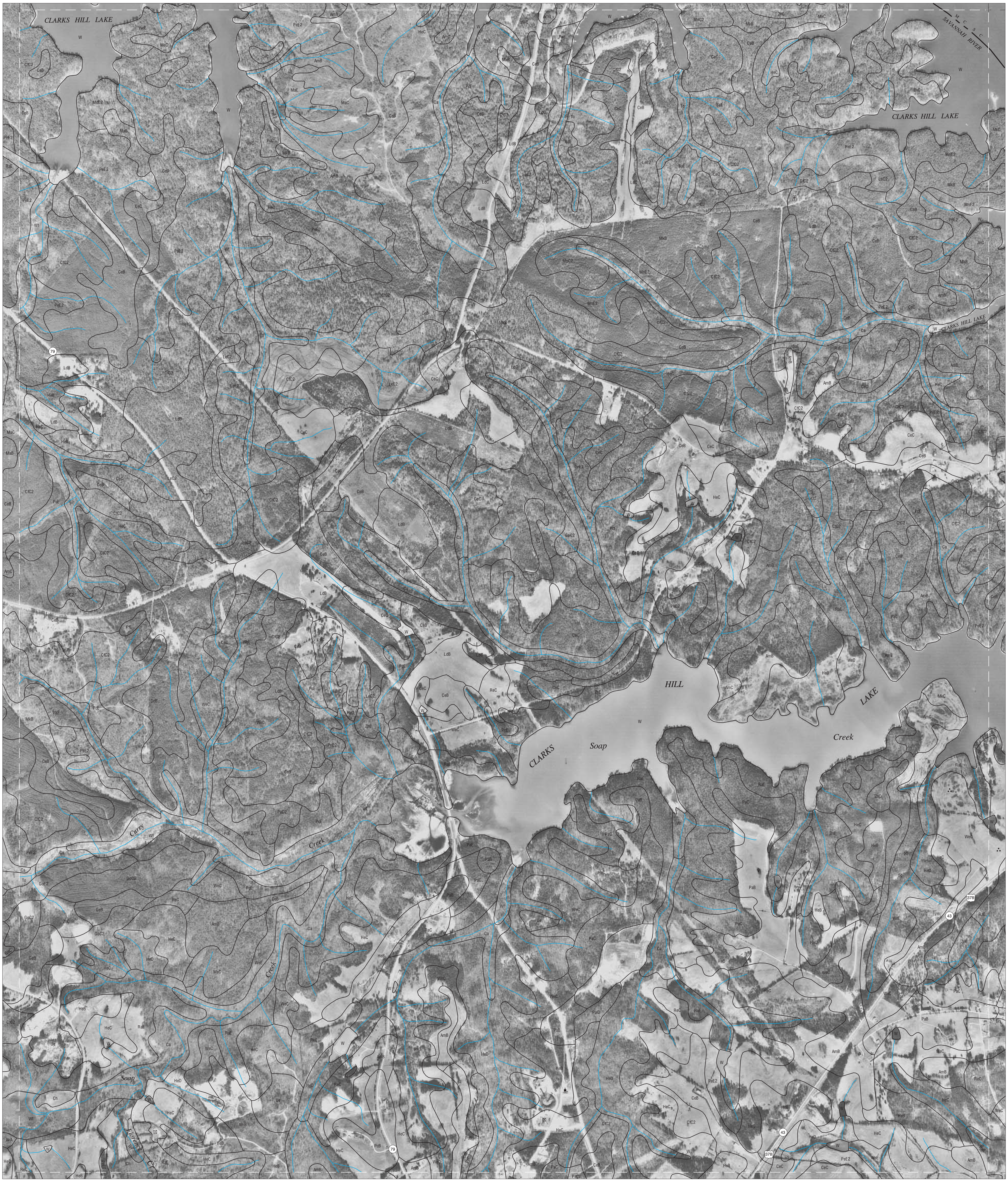
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 13, Chennault SE

Joins sheet 14, Willington SW

82° 30′ 00″ 82° 26′15″

33° 52′ 30″ 33° 52′ 30″



Joins sheet 22, Metasville NE

Joins sheet 24, Lincolnton NE

33° 48′ 45″ 33° 48′ 45″

82° 30′ 00″ 82° 26′15″

Joins sheet 33, Metasville SE

Joins sheet 34, Lincolnton SW

Joins sheet 35, Lincolnton SE

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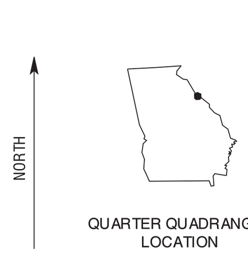
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

13	14	
22		24
33	34	35

13 CHENNAULT SE
14 WILLINGTON SW
22 METASVILLE NE
24 LINCOLNTON NE
33 METASVILLE SE
34 LINCOLNTON SW
35 LINCOLNTON SE

INDEX TO ADJOINING 3.75 MAPS

LINCOLNTON NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 23 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

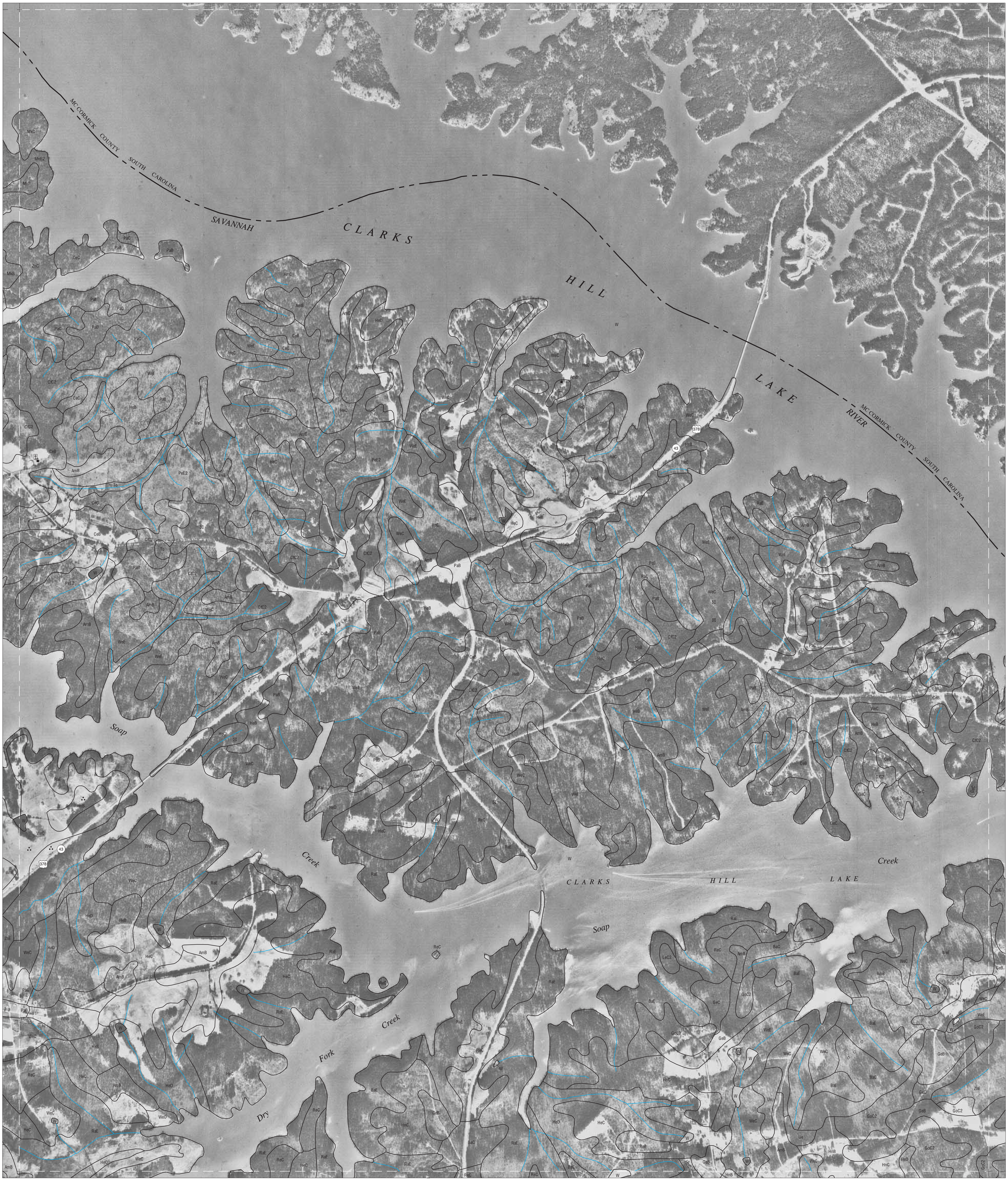
Joins sheet 14, Willington SW

82° 26′15″ 82° 22′30″

33° 52′30″ 33° 52′30″

Joins sheet 23, Lincolnton NW

Joins sheet 25, Plum Branch NW



33° 48′45″ 33° 48′45″

82° 26′15″ 82° 22′30″

Joins sheet 34, Lincolnton SW

Joins sheet 35, Lincolnton SE

Joins sheet 36, Plum Branch SW

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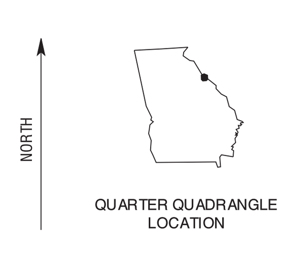
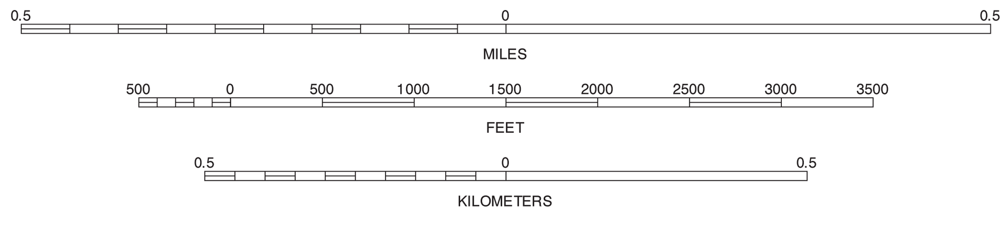
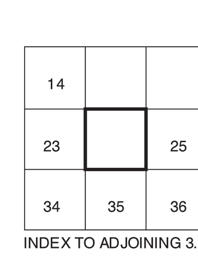
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000





14 WILLINGTON SW

23 LINCOLNTON NW
25 PLUM BRANCH NW
34 LINCOLNTON SW
35 LINCOLNTON SE
36 PLUM BRANCH SW

INDEX TO ADJOINING 3.75 MAPS

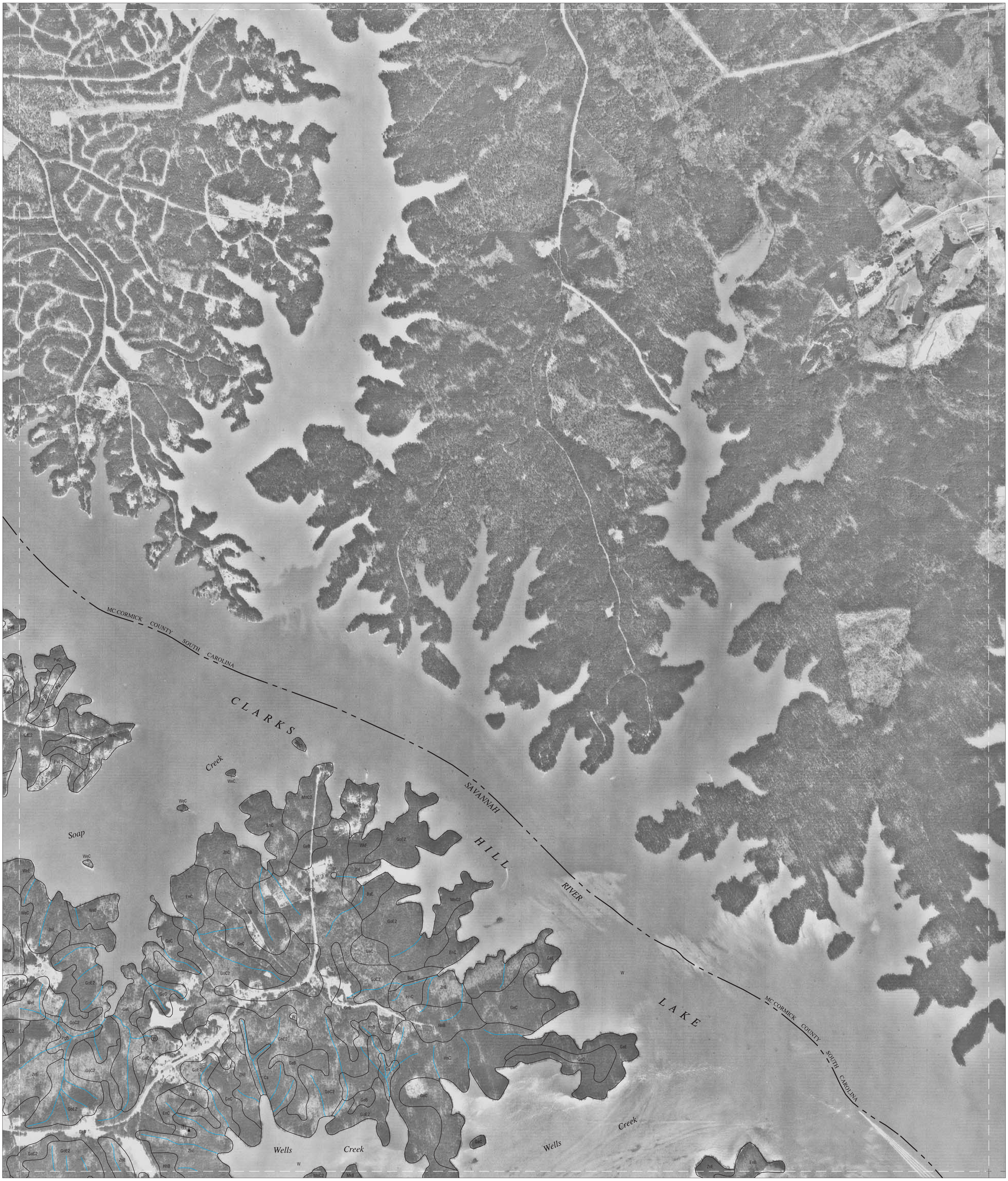
LINCOLNTON NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 24 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

82° 22′30″ — 82°18′45″
33° 52′30″ — 33° 52′30″

Joins sheet 24, Lincolnton NE



33° 48′45″ — 33° 48′45″
82° 22′30″ — 82°18′45″

Joins sheet 36, Plum Branch SW

Joins sheet 35, Lincolnton SE

Joins sheet 37, Plum Branch SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

24 LINCOLNTON NE
35 LINCOLNTON SE
36 PLUM BRANCH SW
37 PLUM BRANCH SE

INDEX TO ADJOINING 3.75 MAPS

PLUM BRANCH NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 25 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

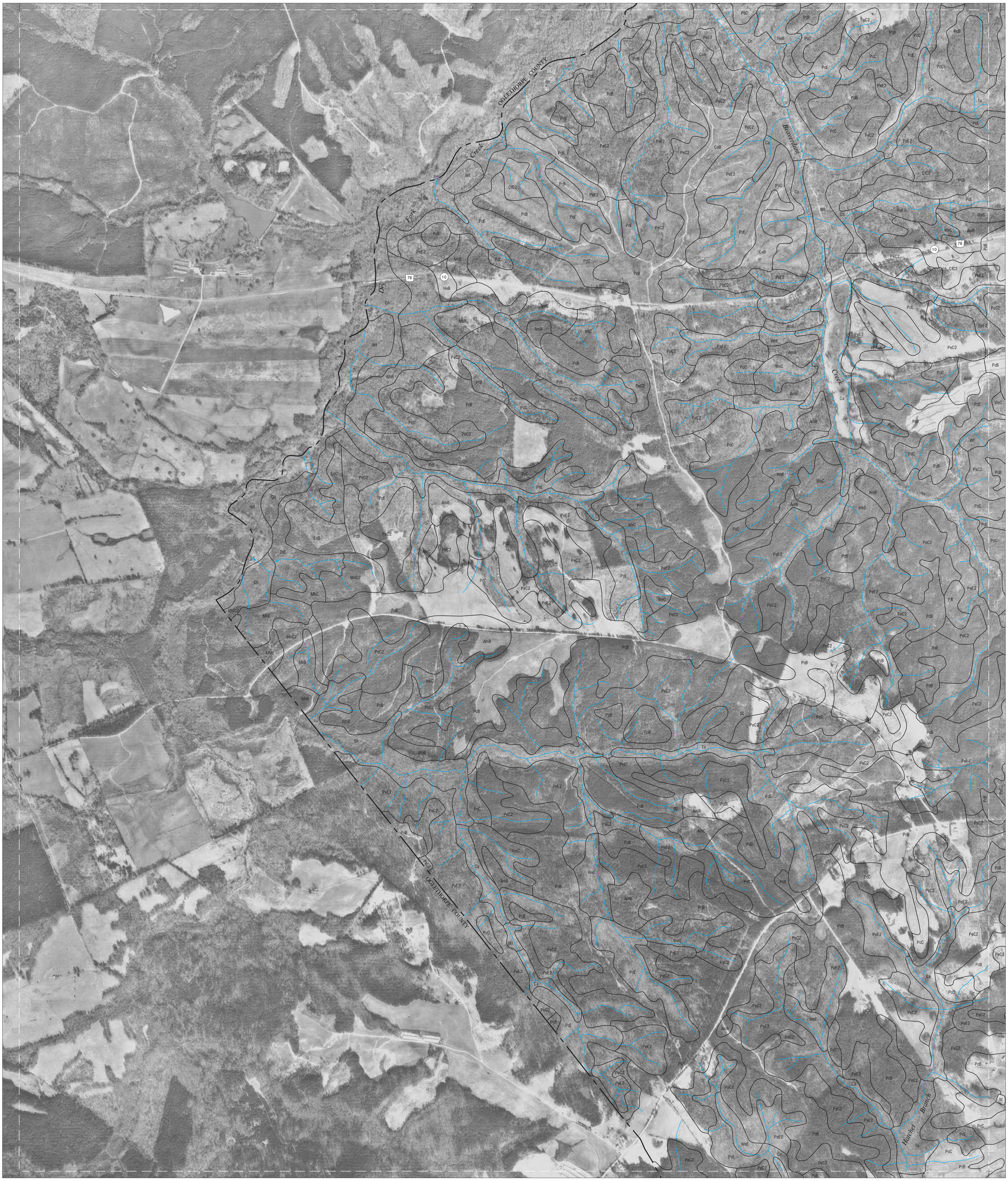
LINCOLN AND WILKES COUNTIES, GEORGIA
RAYLE SW QUADRANGLE
SHEET NUMBER 26 OF 69

Joins sheet 16, Rayle NE

Joins sheet 15, Rayle NW

83° 00'00" 82° 56'15"

33° 48'45" 33° 48'45"



33° 45'00" 33° 45'00"

83° 00'00" 82° 56'15"

Joins sheet 27, Rayle SE

Joins sheet 39, Philomath NW

Joins sheet 40, Philomath NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

15	16	15 RAYLE NW 16 RAYLE NE
	27	27 RAYLE SE
39	40	39 PHILOMATH NW 40 PHILOMATH NE

INDEX TO ADJOINING 3.75 MAPS

RAYLE SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 26 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 15, Rayle NW

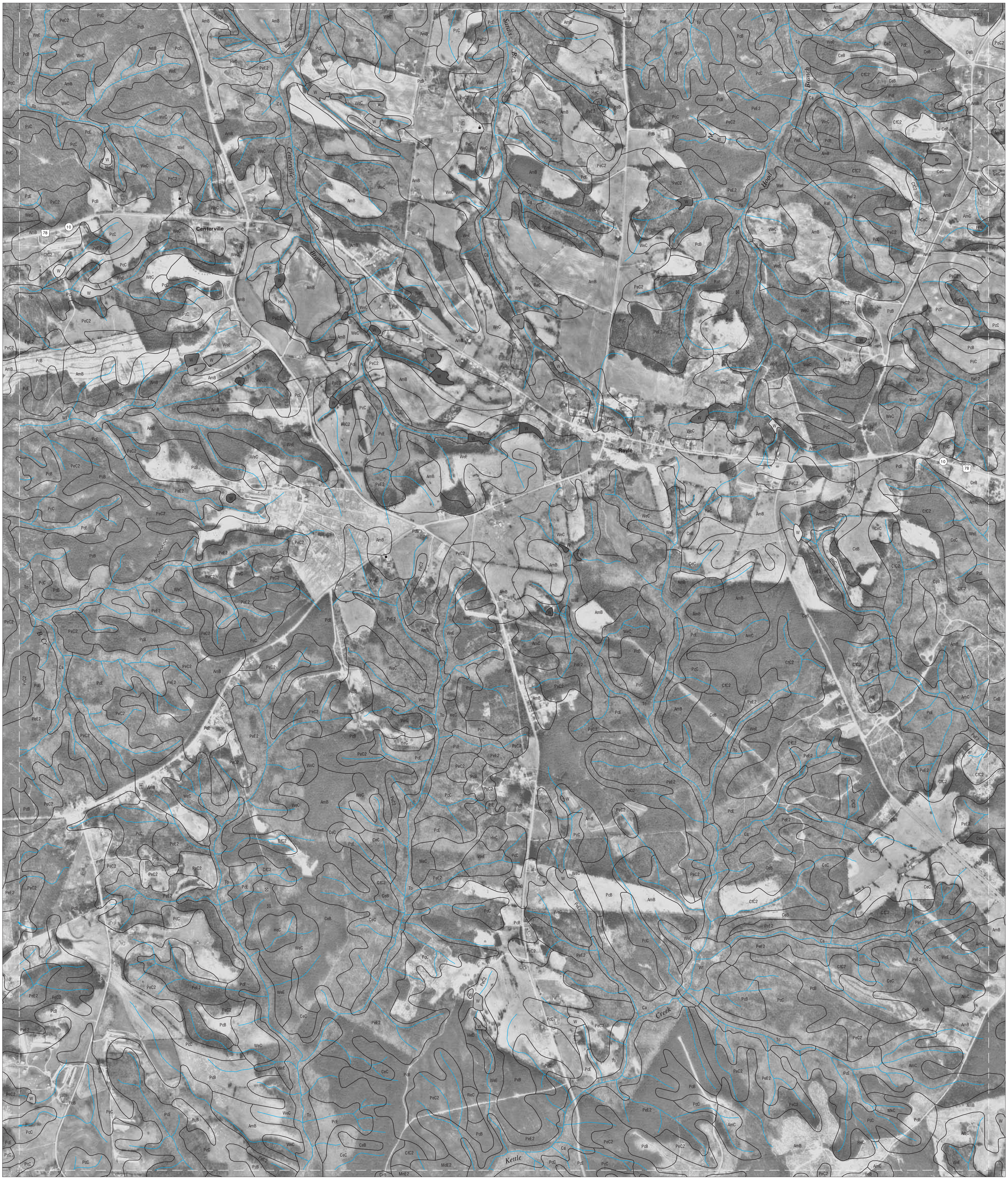
Joins sheet 16, Rayle NE

Joins sheet 17, Celeste NW

82° 56′15″ 82° 52′30″

33° 48′45″ 33° 48′45″

Joins sheet 26, Rayle SW



Joins sheet 28, Celeste SW

33° 45′00″ 33° 45′00″

82° 56′15″ 82° 52′30″

Joins sheet 39, Philomath NW

Joins sheet 40, Philomath NE

Joins sheet 41, Washington West NW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

15	16	17
26		28
39	40	41

15 RAYLE NW
16 RAYLE NE
17 CELESTE NW
26 RAYLE SW
28 CELESTE SW
39 PHILOMATH NW
40 PHILOMATH NE
41 WASHINGTON WEST NW

INDEX TO ADJOINING 3.75 MAPS

RAYLE SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 27 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
CELESTE SW QUADRANGLE
SHEET NUMBER 28 OF 69

Joins sheet 16, Rayle NE

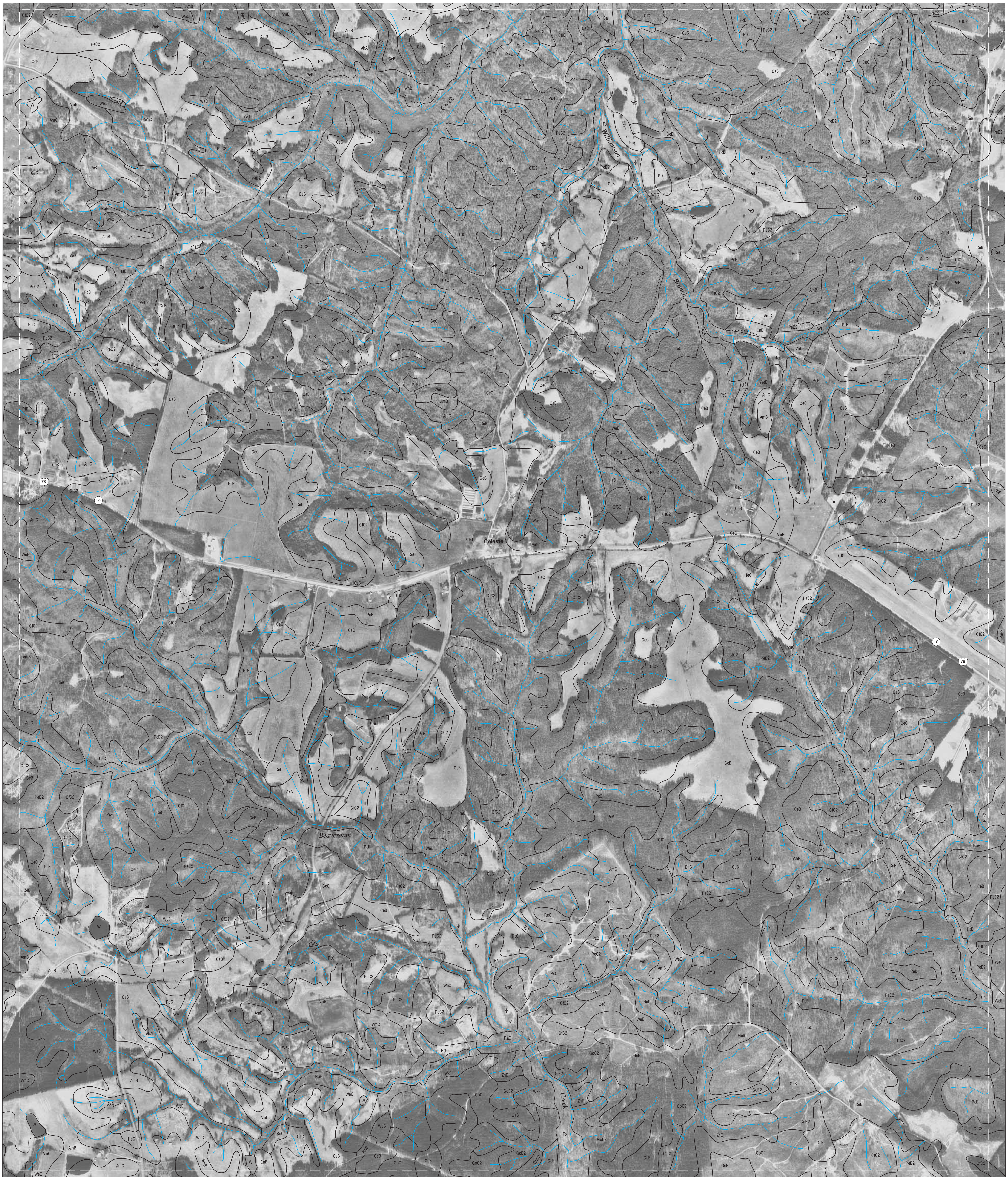
Joins sheet 17, Celeste NW

Joins sheet 18, Celeste NE

82° 52′30″ 82° 48′45″

33° 48′45″ 33° 48′45″

Joins sheet 27, Rayle SE



Joins sheet 29, Celeste SE

33° 45′00″ 33° 45′00″

82° 52′30″ 82° 48′45″

Joins sheet 40, Philomath NE

Joins sheet 41, Washington West NW

Joins sheet 42, Washington West NE

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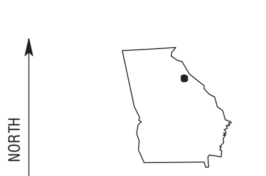
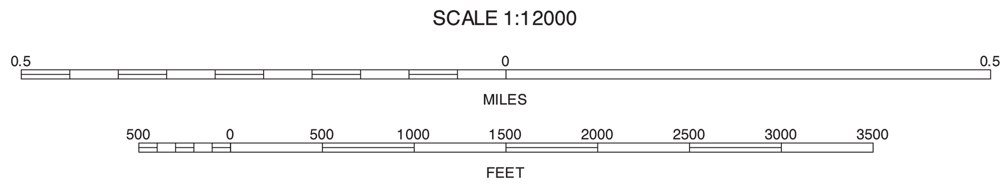
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



16	17	18
27		29
40	41	42

16 RAYLE NE
17 CELESTE NW
18 CELESTE NE
27 RAYLE SE
29 CELESTE SE
40 PHILOMATH NE
41 WASHINGTON WEST NW
42 WASHINGTON WEST NE

INDEX TO ADJOINING 3.75 MAPS

CELESTE SW, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 28 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 17, Celeste NW

Joins sheet 18, Celeste NE

Joins sheet 19, Tignall NW

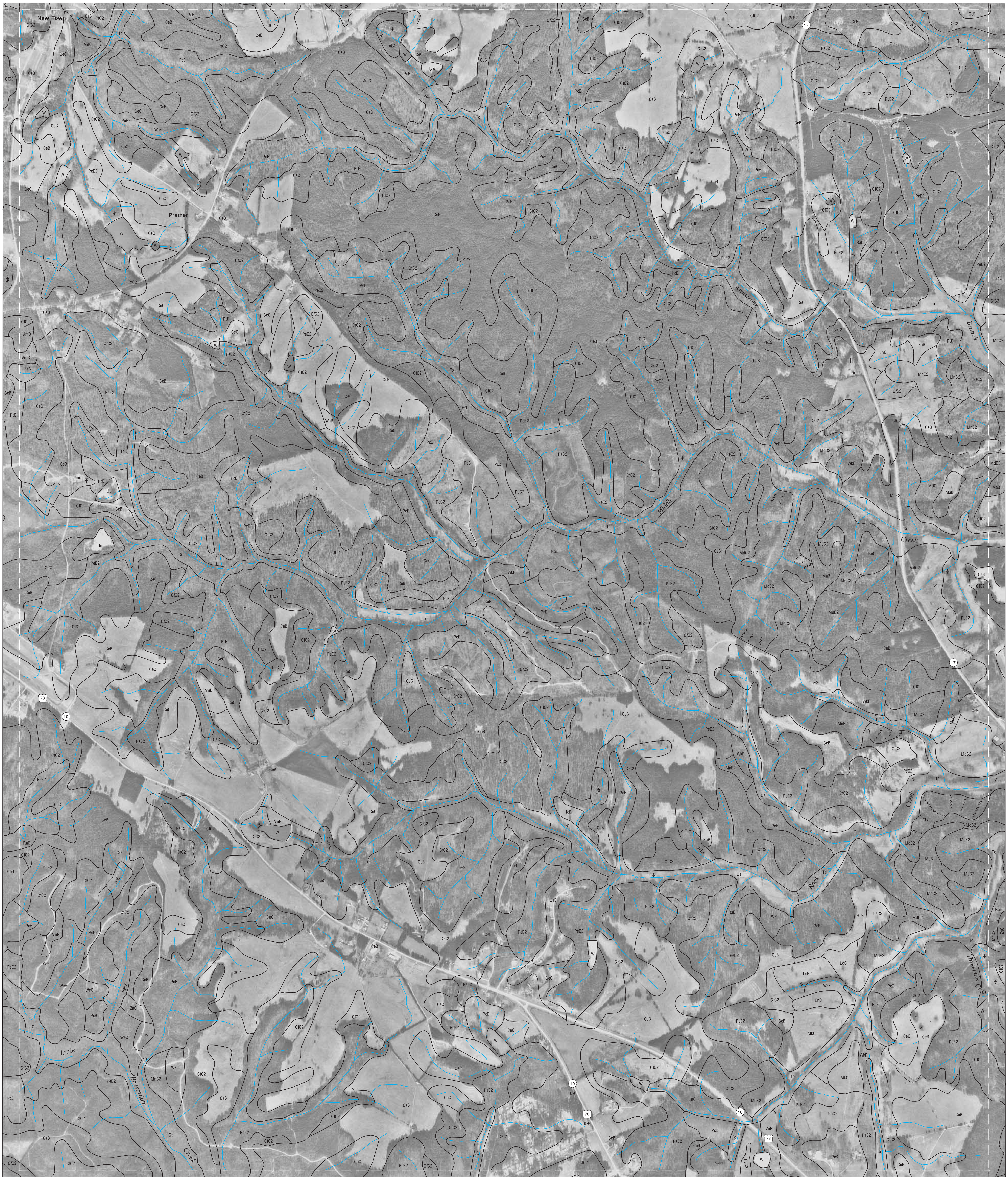
82° 48′45″

82° 45′00″

33° 48′45″

33° 48′45″

Joins sheet 28, Celeste SW



Joins sheet 30, Tignall SW

33° 45′00″

33° 45′00″

82° 48′45″

82° 45′00″

Joins sheet 41, Washington West NW

Joins sheet 42, Washington West NE

Joins sheet 43, Washington East NW

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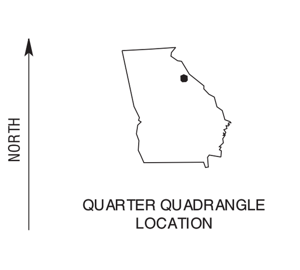
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

17	18	19
28		30
41	42	43

17 CELESTE NW
18 CELESTE NE
19 TIGNALL NW
28 CELESTE SW
30 TIGNALL SW
41 WASHINGTON WEST NW
42 WASHINGTON WEST NE
43 WASHINGTON EAST NW

INDEX TO ADJOINING 3.75 MAPS

CELESTE SE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 29 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 18, Celeste NE

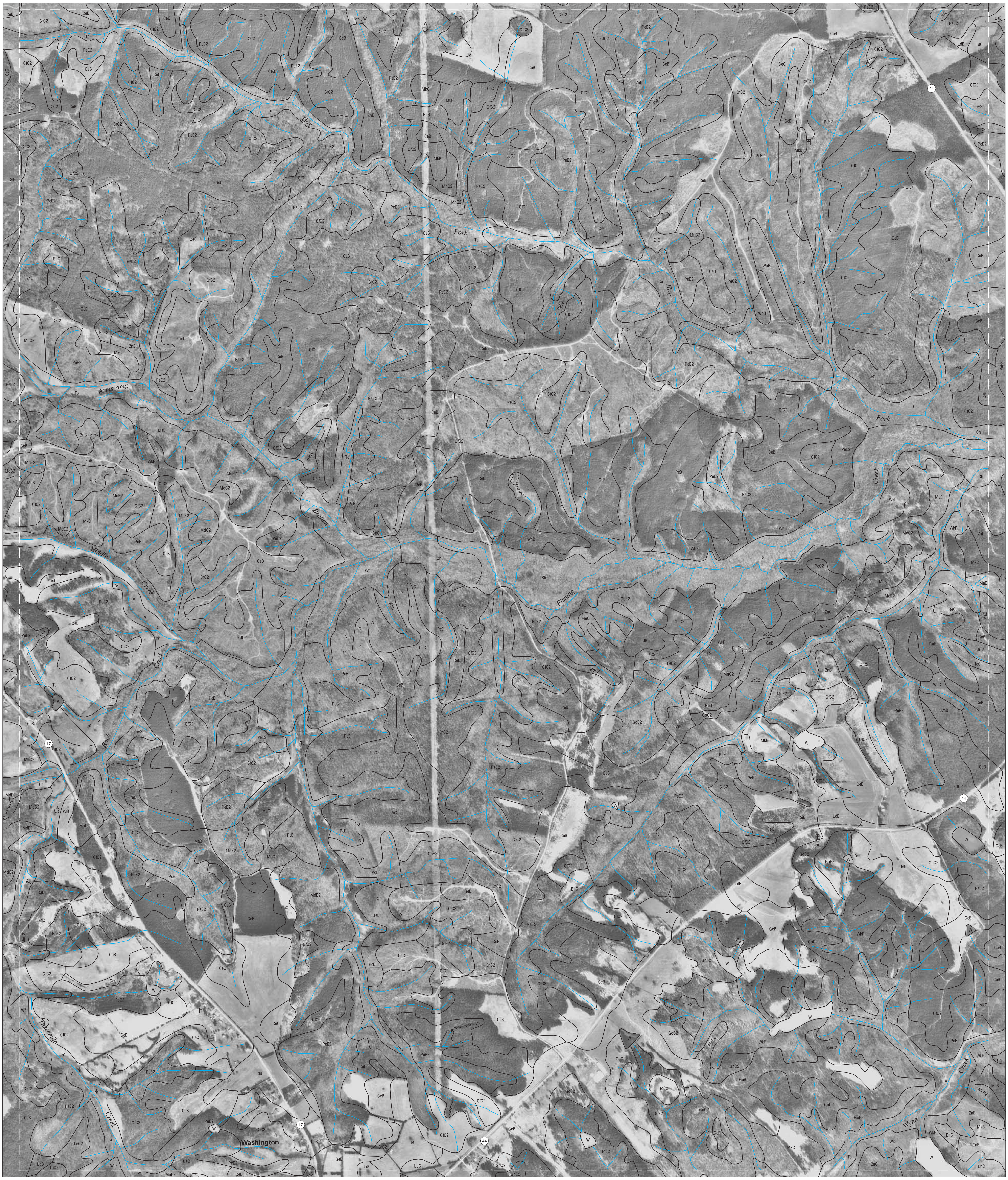
Joins sheet 19, Tignall NW

Joins sheet 20, Tignall NE

82° 45′00″ 82° 41′15″

33° 48′45″ 33° 48′45″

Joins sheet 29, Celeste SE



Joins sheet 31, Tignall SE

33° 45′00″ 33° 45′00″

82° 45′00″ 82° 41′15″

Joins sheet 42, Washington West NE

Joins sheet 43, Washington East NW

Joins sheet 44, Washington East NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

18	19	20
29		31
42	43	44

18 CELESTE NE
19 TIGNALL NW
20 TIGNALL NE
29 CELESTE SE
31 TIGNALL SE
42 WASHINGTON WEST NE
43 WASHINGTON EAST NW
44 WASHINGTON EAST NE

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TIGNALL SW, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 30 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

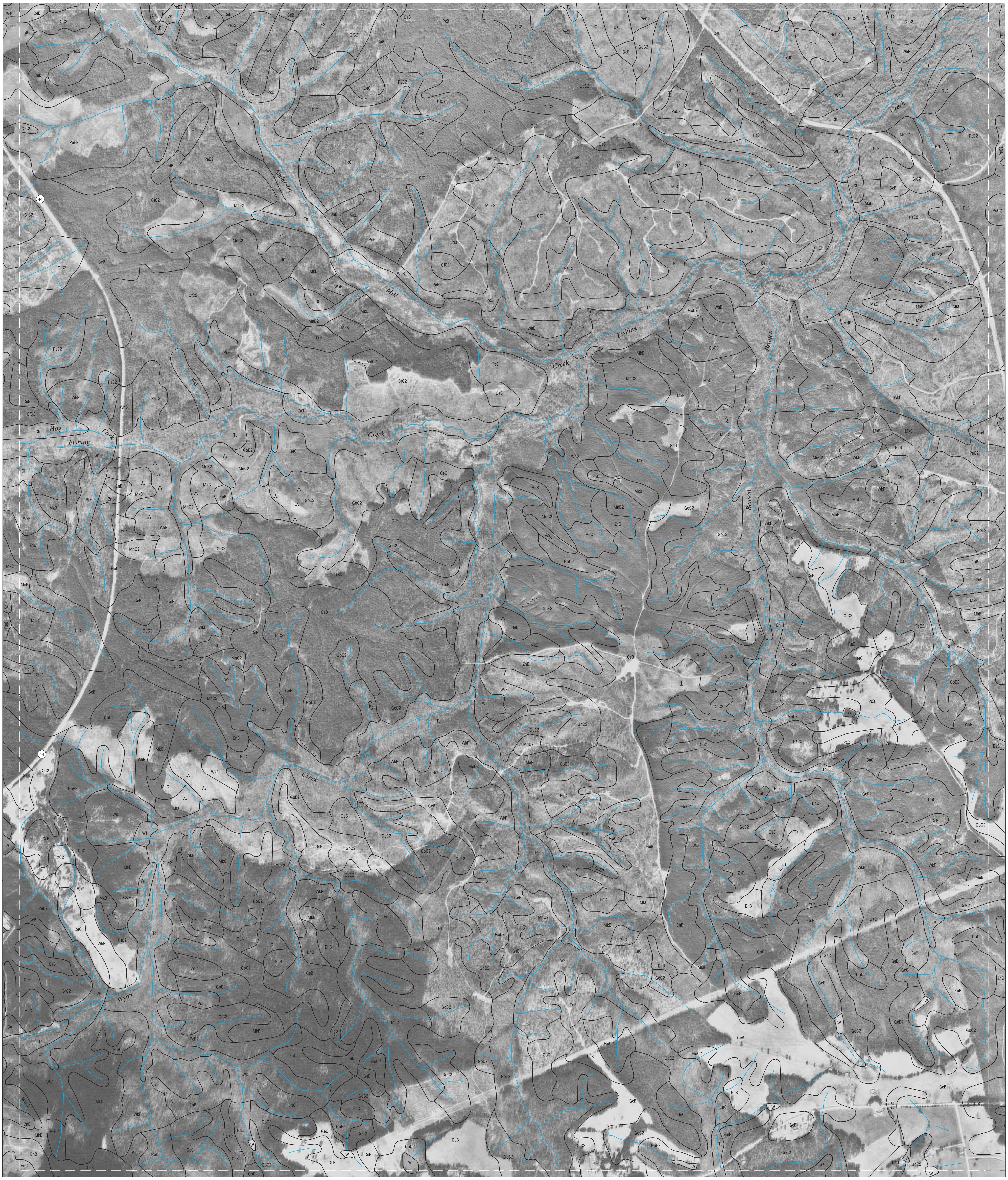
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
TIGNALL SE QUADRANGLE
SHEET NUMBER 31 OF 69

82° 41′15″ 33° 48′45″

82° 37′30″ 33° 48′45″

Joins sheet 30, Tignall SW



Joins sheet 32, Metasville SW

33° 45′00″ 82° 41′15″

33° 45′00″ 82° 37′30″

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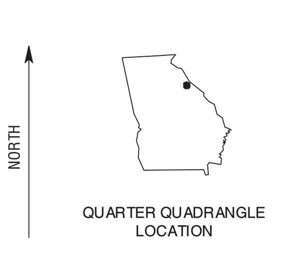
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

19	20	21
30		32
43	44	45

19 TIGNALL NW
20 TIGNALL NE
21 METASVILLE NW
30 TIGNALL SW
32 METASVILLE SW
43 WASHINGTON EAST NW
44 WASHINGTON EAST NE
45 AONIA NW

INDEX TO ADJOINING 3.75 MAPS

TIGNALL SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 31 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
METASVILLE SW QUADRANGLE
SHEET NUMBER 32 OF 69

Joins sheet 20, Tignall NE

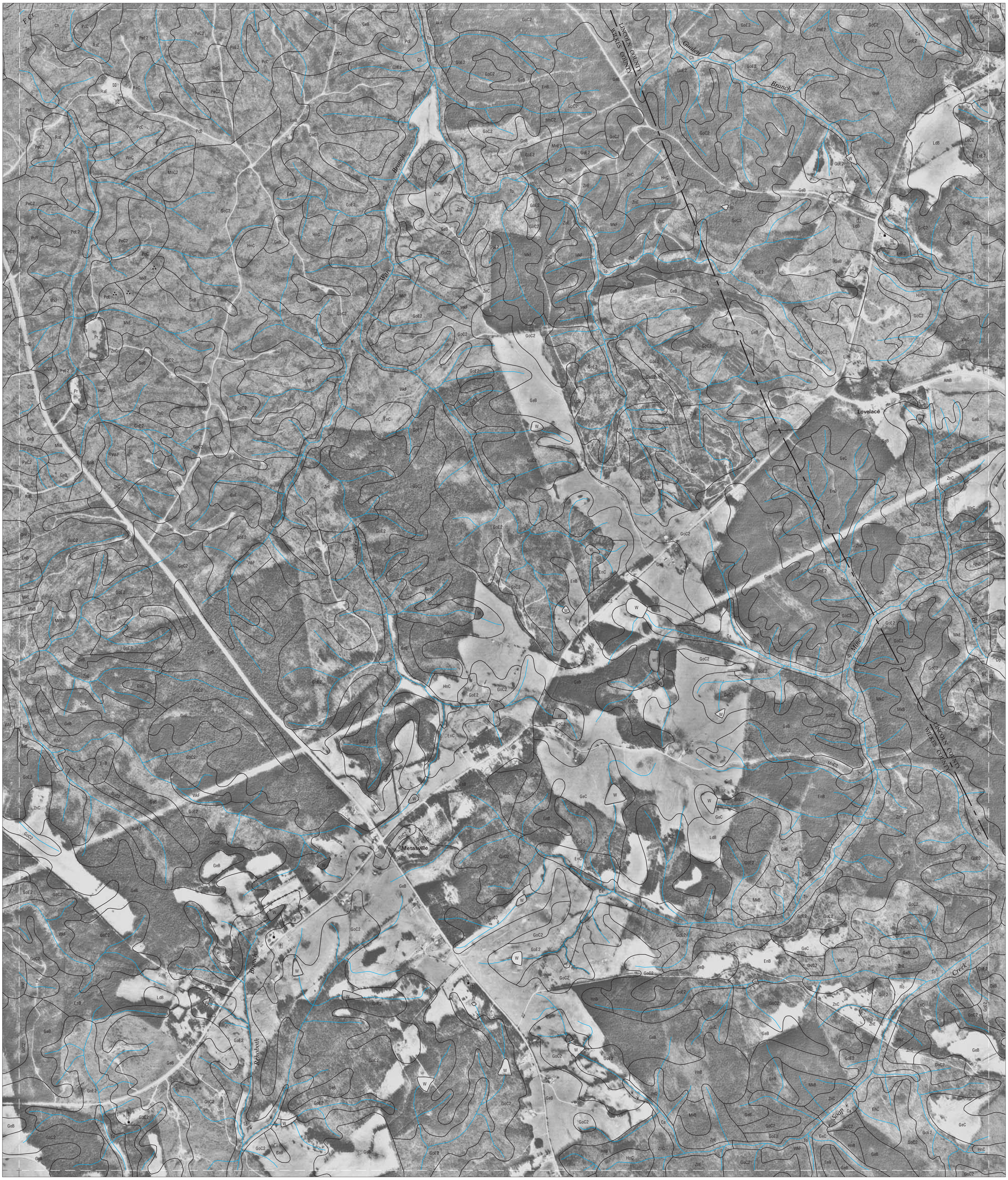
Joins sheet 21, Metasville NW

Joins sheet 22, Metasville NE

82° 37′30″ 33° 48′45″

82° 33′45″ 33° 48′45″

Joins sheet 31, Tignall SE



Joins sheet 33, Metasville SE

33° 45′00″ 82° 37′30″

33° 45′00″ 82° 33′45″

Joins sheet 44, Washington East NE

Joins sheet 45, Aonia NW

Joins sheet 46, Aonia NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

20	21	22
31		33
44	45	46

20 TIGNALL NE
21 METASVILLE NW
22 METASVILLE NE
31 TIGNALL SE
33 METASVILLE SE
44 WASHINGTON EAST NE
45 AONIA NW
46 AONIA NE

INDEX TO ADJOINING 3.75 MAPS

METASVILLE SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 32 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 21, Metasville NW

Joins sheet 22, Metasville NE

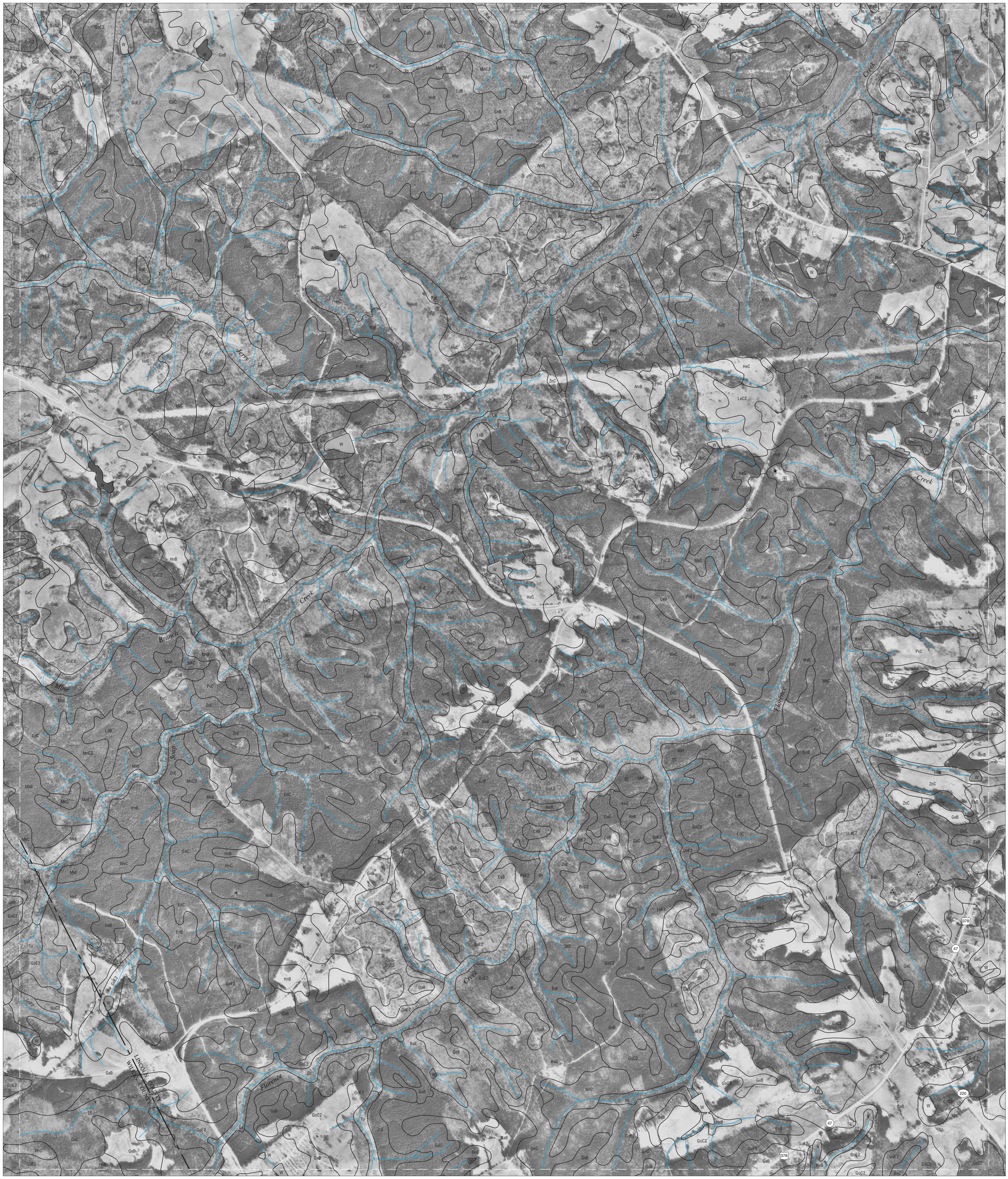
Joins sheet 23, Lincolnton NW

82° 33′ 45″ 82° 30′ 00″

33° 48′ 45″ 33° 48′ 45″

Joins sheet 32, Metasville SW

Joins sheet 34, Lincolnton SW



33° 45′ 00″ 33° 45′ 00″

82° 33′ 45″ 82° 30′ 00″

Joins sheet 45, Aonia NW

Joins sheet 46, Aonia NE

Joins sheet 47, Woodlawn NW

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1993 and 1994 aerial photography. Cultural and hydrography annotation was acquired from the U.S. Department of Interior, Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

21	22	23
32		34
45	46	47

21 METASVILLE NW
22 METASVILLE NE
23 LINCOLNTON NW
32 METASVILLE SW
34 LINCOLNTON SW
45 AONIA NW
46 AONIA NE
47 WOODLAWN NW

INDEX TO ADJOINING 3.75 MAPS

METASVILLE SE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 33 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
LINCOLNTON SW QUADRANGLE
SHEET NUMBER 34 OF 69

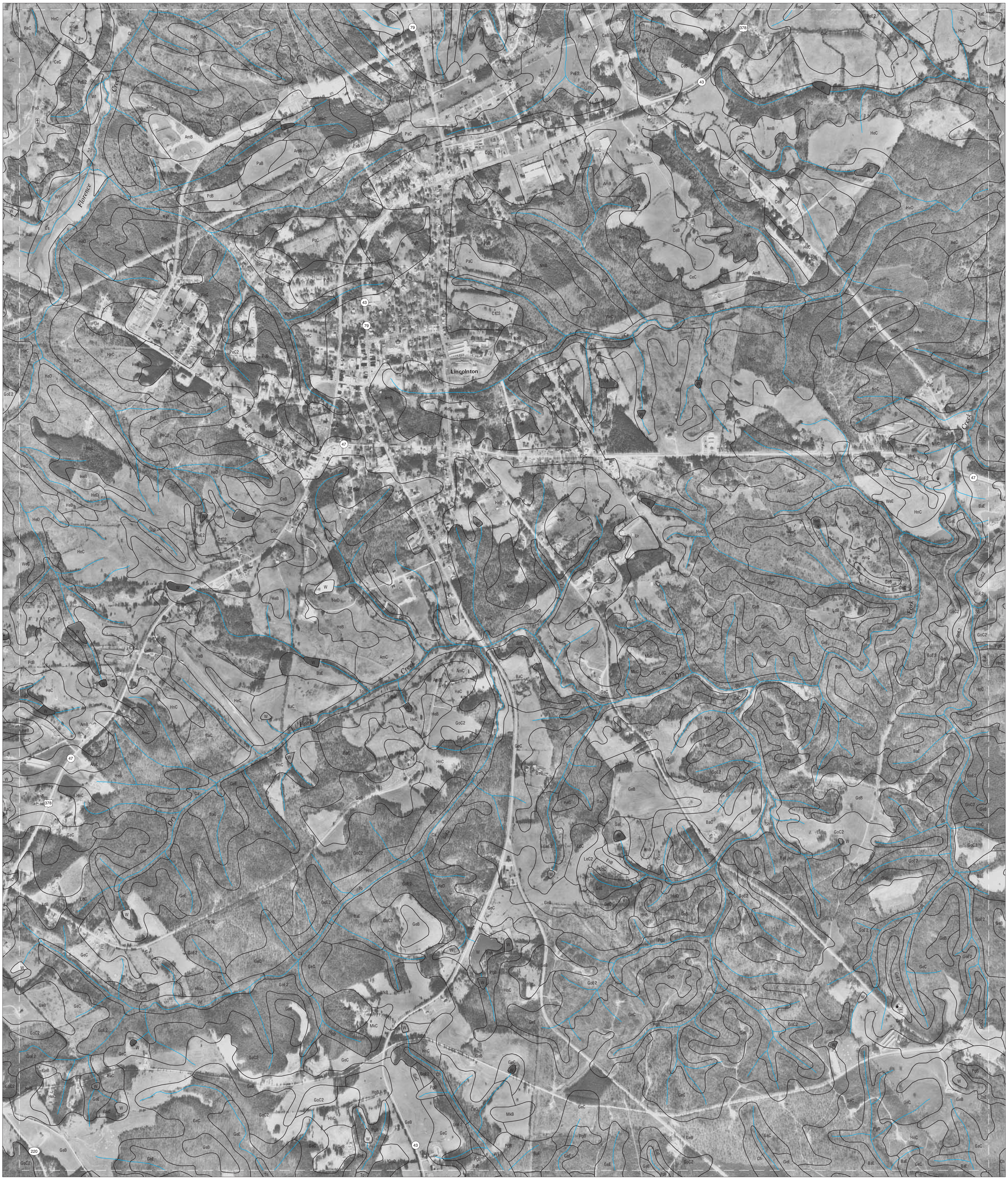
Joins sheet 22, Metasville NE

Joins sheet 23, Lincolnton NW

Joins sheet 24, Lincolnton NE

82° 30′00″ 33° 48′45″

82° 26′15″ 33° 48′45″



Joins sheet 33, Metasville SE

Joins sheet 35, Lincolnton SE

33° 45′00″ 82° 30′00″

33° 45′00″ 82° 26′15″

Joins sheet 46, Aonia NE

Joins sheet 47, Woodlawn NW

Joins sheet 48, Woodlawn NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

22	23	24
33		35
46	47	48

22 METASVILLE NE
23 LINCOLNTON NW
24 LINCOLNTON NE
33 METASVILLE SE
35 LINCOLNTON SE
46 AONIA NE
47 WOODLAWN NW
48 WOODLAWN NE

INDEX TO ADJOINING 3.75 MAPS

LINCOLNTON SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 34 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 23, Lincolnton NW

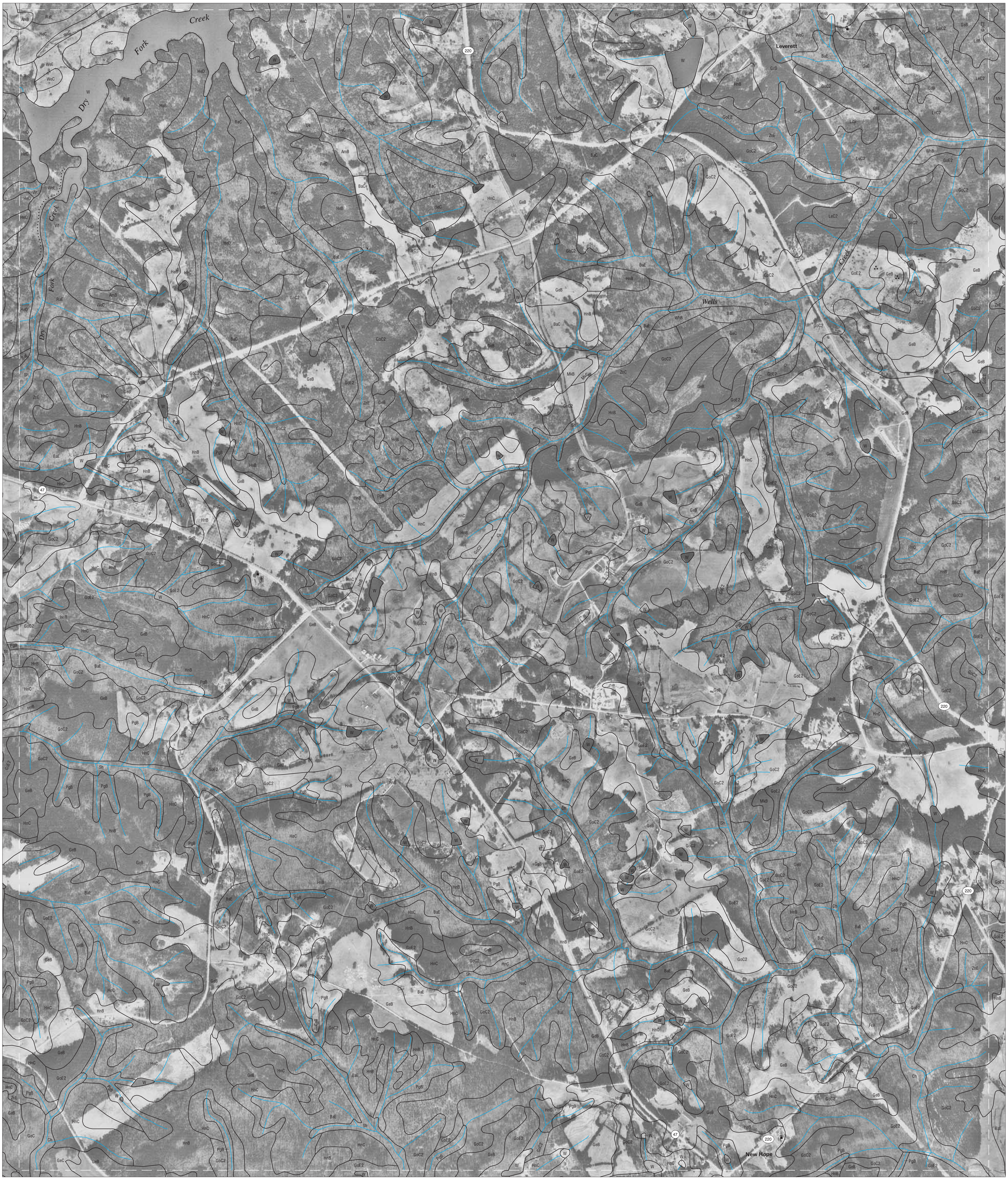
Joins sheet 24, Lincolnton NE

Joins sheet 25, Plum Branch NW

82° 26'15" 82° 22'30"

33° 48'45" 33° 48'45"

Joins sheet 34, Lincolnton SW



Joins sheet 36, Plum Branch SW

33° 45'00" 33° 45'00"

82° 26'15" 82° 22'30"

Joins sheet 47, Woodlawn NW

Joins sheet 48, Woodlawn NE

Joins sheet 49, Leah NW

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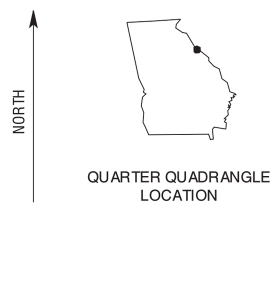
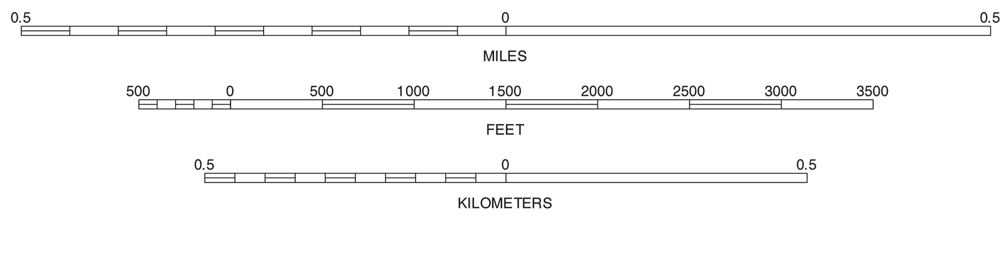
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



23	24	25
34		36
47	48	49

23 LINCOLNTON NW
24 LINCOLNTON NE
25 PLUM BRANCH NW
34 LINCOLNTON SW
36 PLUM BRANCH SW
47 WOODLAWN NW
48 WOODLAWN NE
49 LEAH NW

INDEX TO ADJOINING 3.75 MAPS

LINCOLNTON SE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 35 OF 69

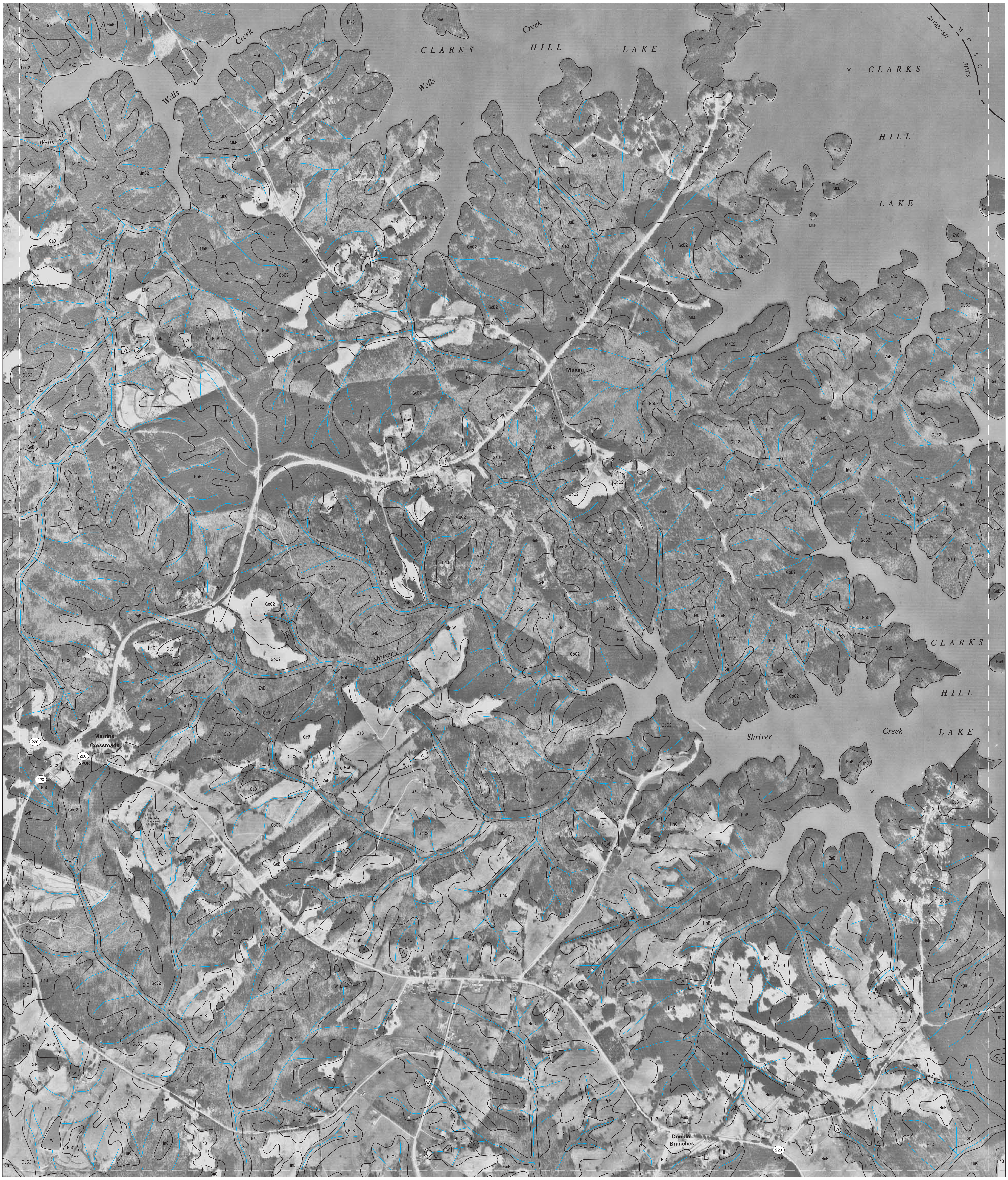
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 24, Lincolnton NE

Joins sheet 25, Plum Branch NW

82° 22′30″ 82°18′45″

33° 48′45″



Joins sheet 35, Lincolnton SE

Joins sheet 37, Plum Branch SE

33° 45′00″

82° 22′30″ 82°18′45″

Joins sheet 48, Woodlawn NE

Joins sheet 49, Leah NW

Joins sheet 50, Leah NE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

24	25	
35		37
48	49	50

24 LINCOLNTON NE
25 PLUM BRANCH NW
35 LINCOLNTON SE
37 PLUM BRANCH SE
48 WOODLAWN NE
49 LEAH NW
50 LEAH NE

INDEX TO ADJOINING 3.75 MAPS

PLUM BRANCH SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 36 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

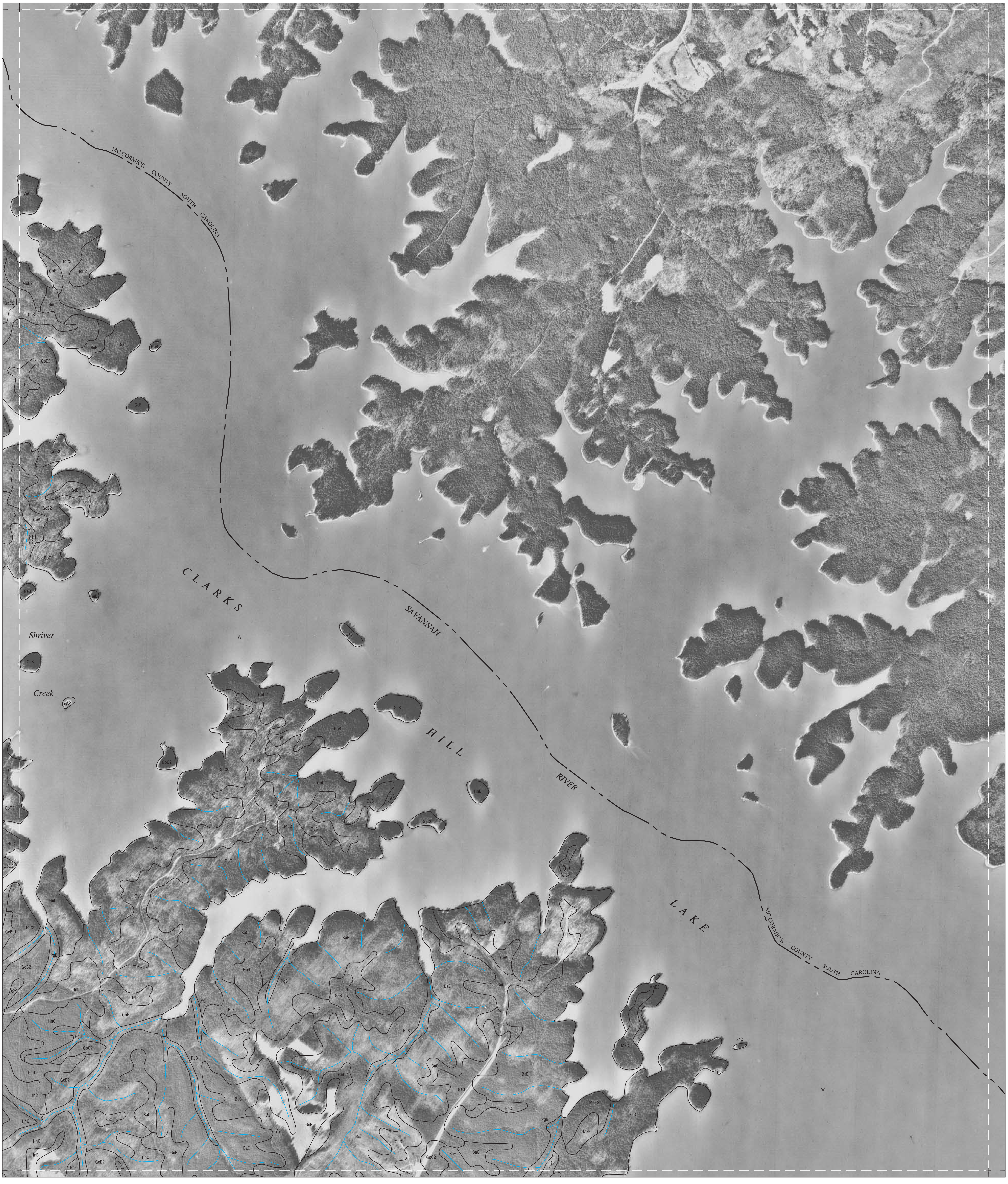
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
PLUM BRANCH SE QUADRANGLE
SHEET NUMBER 37 OF 69

Joins sheet 25, Plum Branch NW

82°18′45″ 82°15′00″

33° 48′45″ 33° 48′45″



Joins sheet 36, Plum Branch SW

Joins sheet 38, Parksville SW

33° 45′00″ 33° 45′00″

82°18′45″ 82°15′00″

Joins sheet 49, Leah NW

Joins sheet 50, Leah NE

Joins sheet 51, Clarks Hill NW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

25		
36		38
49	50	51

25 PLUM BRANCH NW
36 PLUM BRANCH SW
38 PARKSVILLE SW
49 LEAH NW
50 LEAH NE
51 CLARKS HILL NW

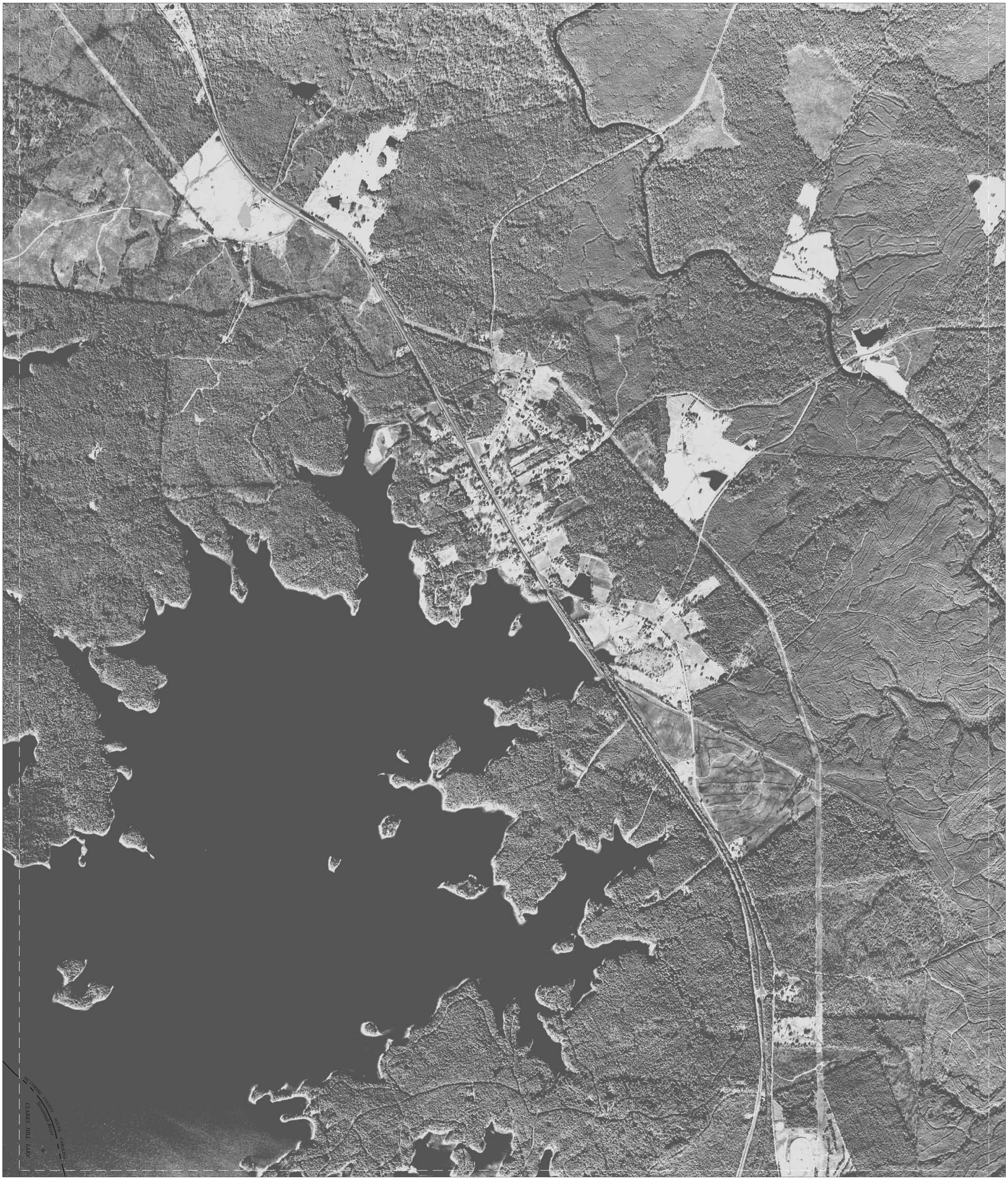
INDEX TO ADJOINING 3.75 MAPS

PLUM BRANCH SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 37 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

82°15′00″ 82°11′15″

33° 48′45″ 33° 48′45″



Joins sheet 37, Plum Branch SE

33° 45′00″ 33° 45′00″

82°15′00″ 82°11′15″

Joins sheet 50, Leah NE

Joins sheet 51, Clarks Hill NW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

37		
50	51	

INDEX TO ADJOINING 3.75 MAPS

37 PLUM BRANCH SE
50 LEAH NE
51 CLARKS HILL NW

PARKSVILLE SW, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 38 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

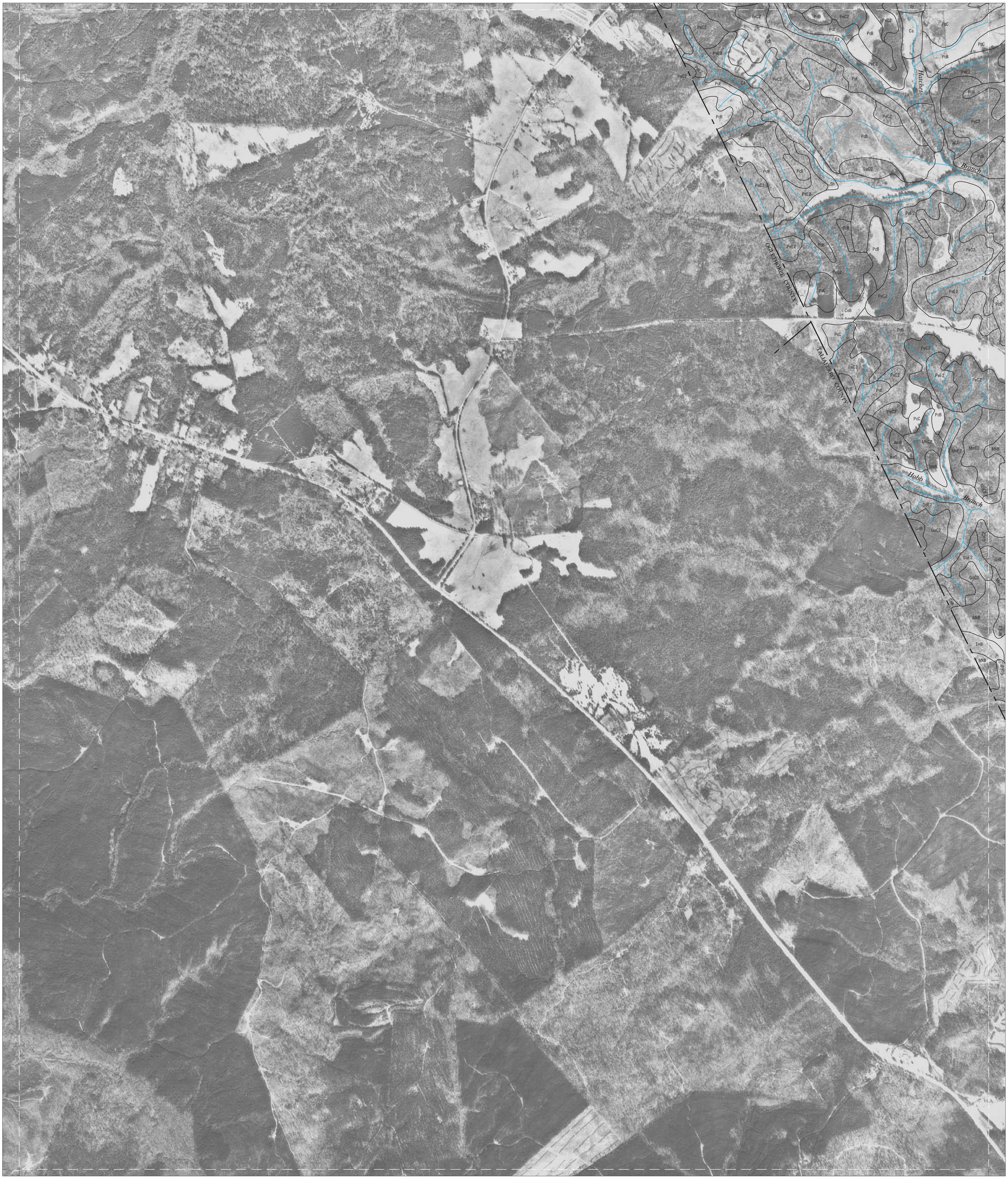
LINCOLN AND WILKES COUNTIES, GEORGIA
PHILOMATH NW QUADRANGLE
SHEET NUMBER 39 OF 69

Joins sheet 26, Rayle SW

Joins sheet 27, Rayle SE

83° 00′00″ 82° 56′15″

33° 45′00″ 33° 45′00″



Joins sheet 40, Philomath NE

33° 41′15″ 33° 41′15″

83° 00′00″ 82° 56′15″

Joins sheet 52, Philomath SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

	26	27
		40
		52

26 RAYLE SW
27 RAYLE SE
40 PHILOMATH NE
52 PHILOMATH SE

INDEX TO ADJOINING 3.75 MAPS

PHILOMATH NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 39 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 26, Rayle SW

Joins sheet 27, Rayle SE

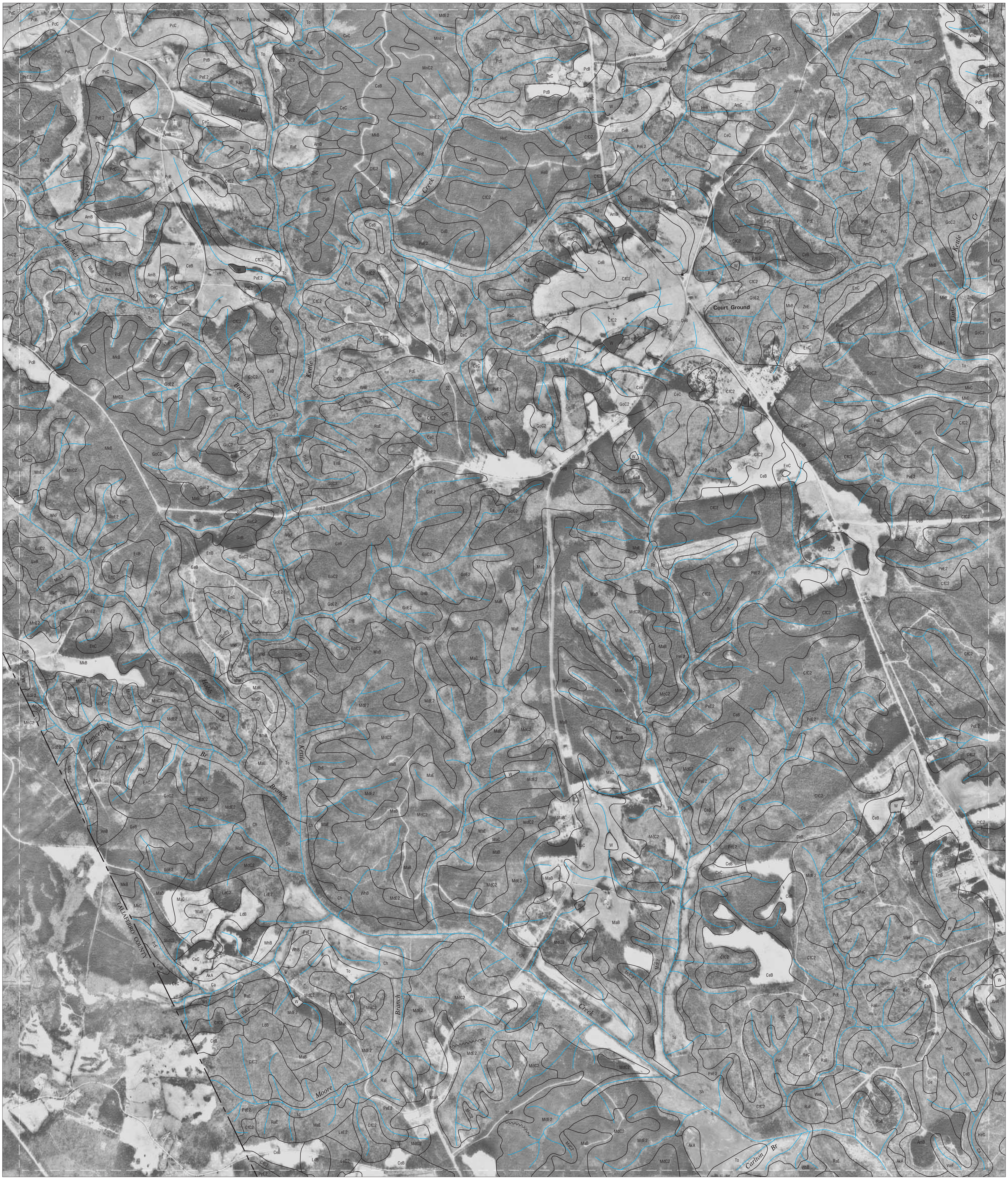
Joins sheet 28, Celeste SW

82° 56′15″ 33° 45′00″

82° 52′30″ 33° 45′00″

Joins sheet 39, Philomath NW

Joins sheet 41, Washington West NW



33° 41′15″ 82° 56′15″

33° 41′15″ 82° 52′30″

Joins sheet 52, Philomath SE

Joins sheet 53, Washington West SW

SCALE 1:12000

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

26	27	28
39		41
	52	53

26 RAYLE SW
27 RAYLE SE
28 CELESTE SW
39 PHILOMATH NW
41 WASHINGTON WEST NW
52 PHILOMATH SE
53 WASHINGTON WEST SW

INDEX TO ADJOINING 3.75 MAPS

PHILOMATH NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 40 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 27, Rayle SE

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

Joins sheet 28, Celeste SW

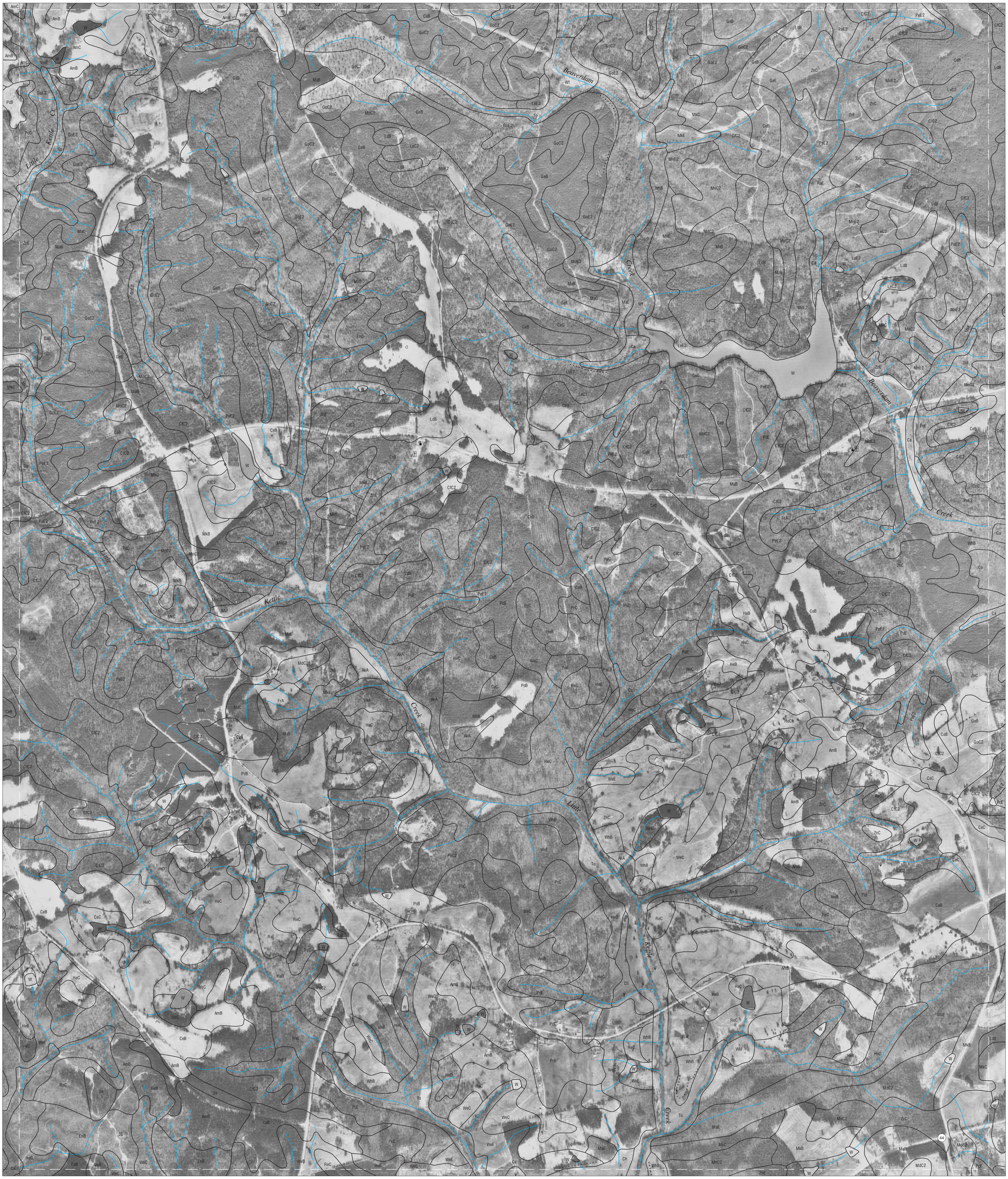
LINCOLN AND WILKES COUNTIES, GEORGIA
WASHINGTON WEST NW QUADRANGLE
SHEET NUMBER 41 OF 69

Joins sheet 29, Celeste SE

82° 52′30″ 82° 48′45″

33° 45′00″ 33° 45′00″

Joins sheet 40, Philomath NE



Joins sheet 42, Washington West NE

33° 41′15″ 33° 41′15″

82° 52′30″ 82° 48′45″

Joins sheet 52, Philomath SE

Joins sheet 53, Washington West SW

Joins sheet 54, Washington West SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

27	28	29
40		42
52	53	54

27 RAYLE SE
28 CELESTE SW
29 CELESTE SE
40 PHILOMATH NE
42 WASHINGTON WEST NE
52 PHILOMATH SE
53 WASHINGTON WEST SW
54 WASHINGTON WEST SE

INDEX TO ADJOINING 3.75 MAPS

WASHINGTON WEST NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 41 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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LINCOLN AND WILKES COUNTIES, GEORGIA
WASHINGTON WEST NE QUADRANGLE

Joins sheet 28, Celeste SW

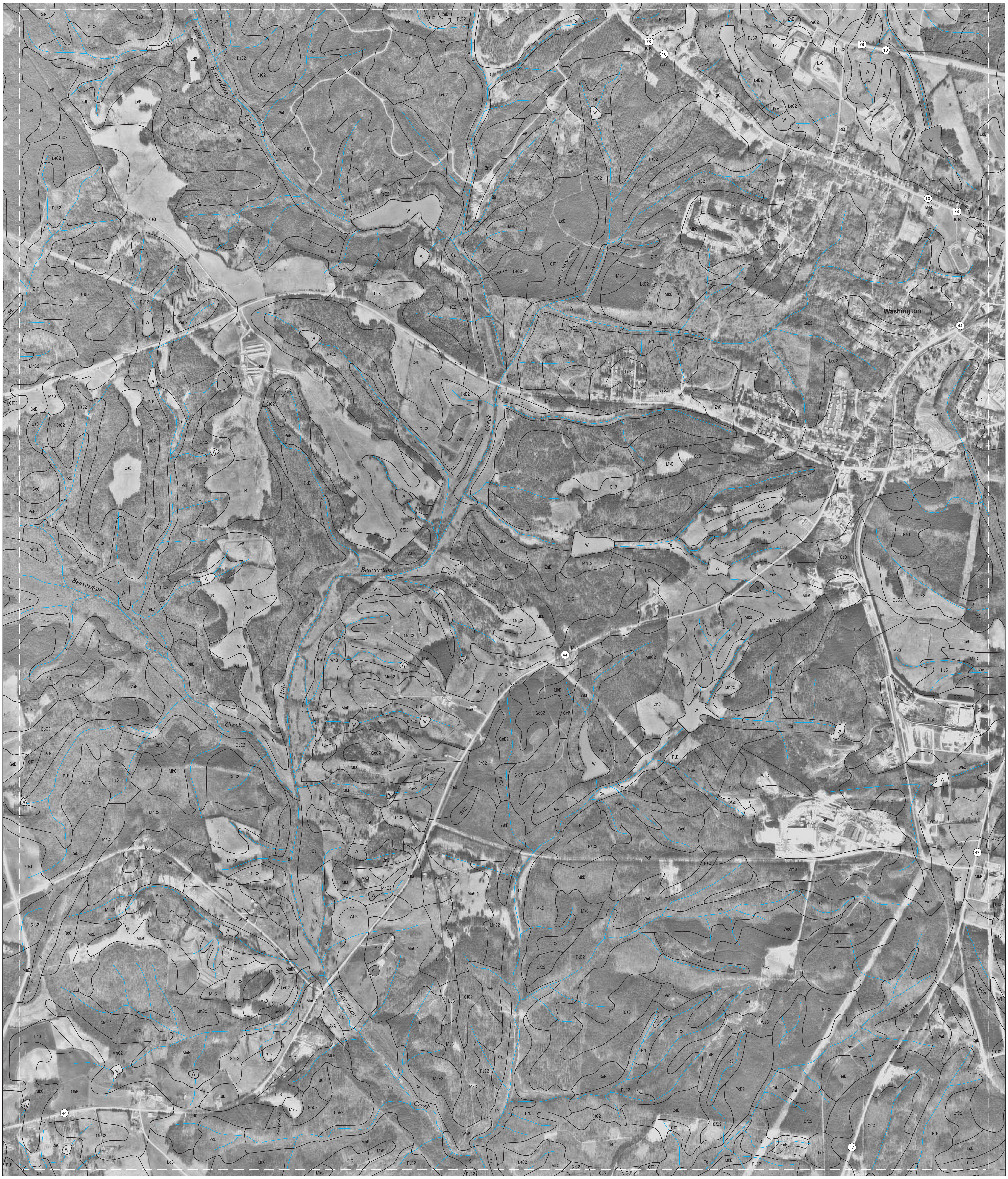
Joins sheet 29, Celeste SE

Joins sheet 30, Tignall SW

82° 48′45″ 82° 45′00″

33° 45′00″ 33° 45′00″

Joins sheet 41, Washington West NW



Joins sheet 43, Washington East NW

33° 41′15″ 33° 41′15″

82° 48′45″ 82° 45′00″

Joins sheet 53, Washington West SW

Joins sheet 54, Washington West SE

Joins sheet 55, Washington East SW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

28	29	30
41		43
53	54	55

28 CELESTE SW
29 CELESTE SE
30 TIGNALL SW
41 WASHINGTON WEST NW
43 WASHINGTON EAST NW
53 WASHINGTON WEST SW
54 WASHINGTON WEST SE
55 WASHINGTON EAST SW

INDEX TO ADJOINING 3.75 MAPS

WASHINGTON WEST NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 42 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 29, Celeste SE

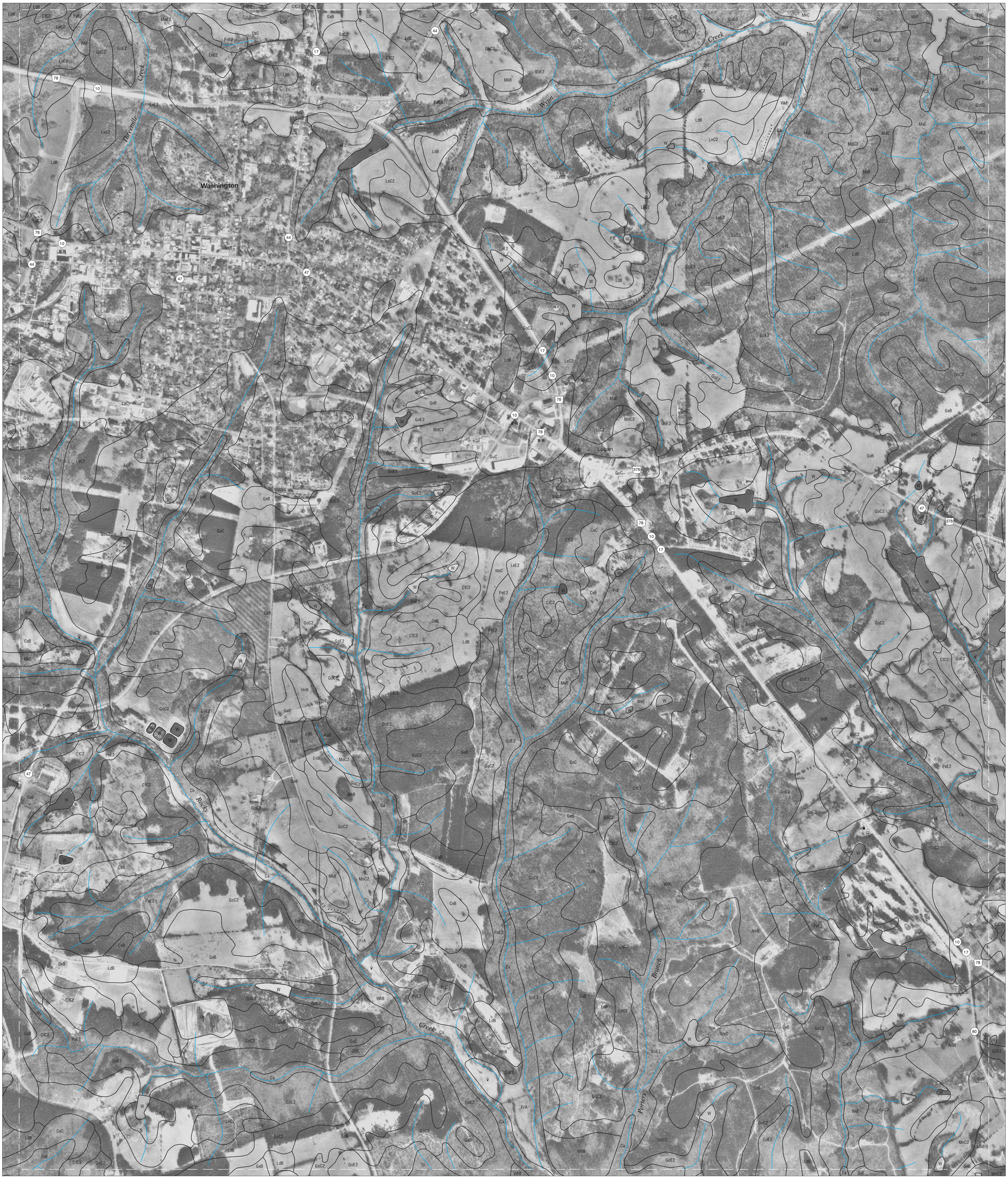
Joins sheet 30, Tignall SW

Joins sheet 31, Tignall SE

82° 45′00″ 82° 41′15″

33° 45′00″ 33° 45′00″

Joins sheet 42, Washington West NE



Joins sheet 44, Washington East NE

33° 41′15″ 33° 41′15″

82° 45′00″ 82° 41′15″

Joins sheet 54, Washington West SE

Joins sheet 55, Washington East SW

Joins sheet 56, Washington East SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

29	30	31
42		44
54	55	56

29 CELESTE SE
30 TIGNALL SW
31 TIGNALL SE
42 WASHINGTON WEST NE
44 WASHINGTON EAST NE
54 WASHINGTON WEST SE
55 WASHINGTON EAST SW
56 WASHINGTON EAST SE

INDEX TO ADJOINING 3.75 MAPS

WASHINGTON EAST NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 43 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
WASHINGTON EAST NE QUADRANGLE
SHEET NUMBER 44 OF 69

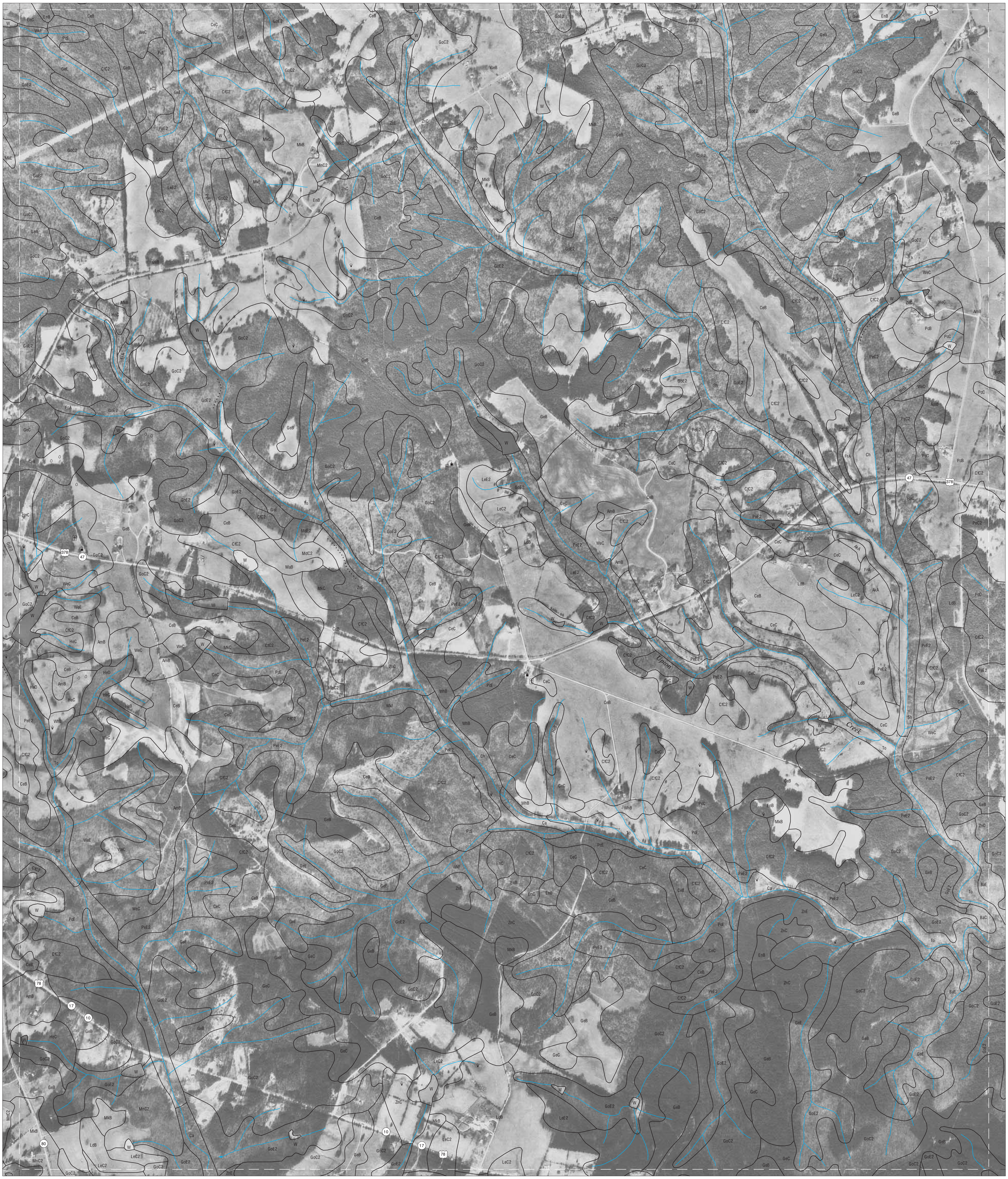
Joins sheet 30, Tignall SW

Joins sheet 31, Tignall SE

Joins sheet 32, Metasville SW

82° 41′15″ | 33° 45′00″ | 82° 37′30″ | 33° 45′00″

Joins sheet 43, Washington East NW



Joins sheet 45, Aonia NW

33° 41′15″ | 82° 41′15″ | 82° 37′30″ | 33° 41′15″

Joins sheet 55, Washington East SW

Joins sheet 56, Washington East SE

Joins sheet 57, Aonia SW

SCALE 1:12000

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North American Datum of 1983 (NAD83). GRS-80 Spheroid
Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

30	31	32
43		45
55	56	57

30 TIGNALL SW
31 TIGNALL SE
32 METASVILLE SW
43 WASHINGTON EAST NW
45 AONIA NW
55 WASHINGTON EAST SW
56 WASHINGTON EAST SE
57 AONIA SW

INDEX TO ADJOINING 3.75 MAPS

WASHINGTON EAST NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 44 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
AONIA NW QUADRANGLE
SHEET NUMBER 45 OF 69

Joins sheet 31, Tignall SE

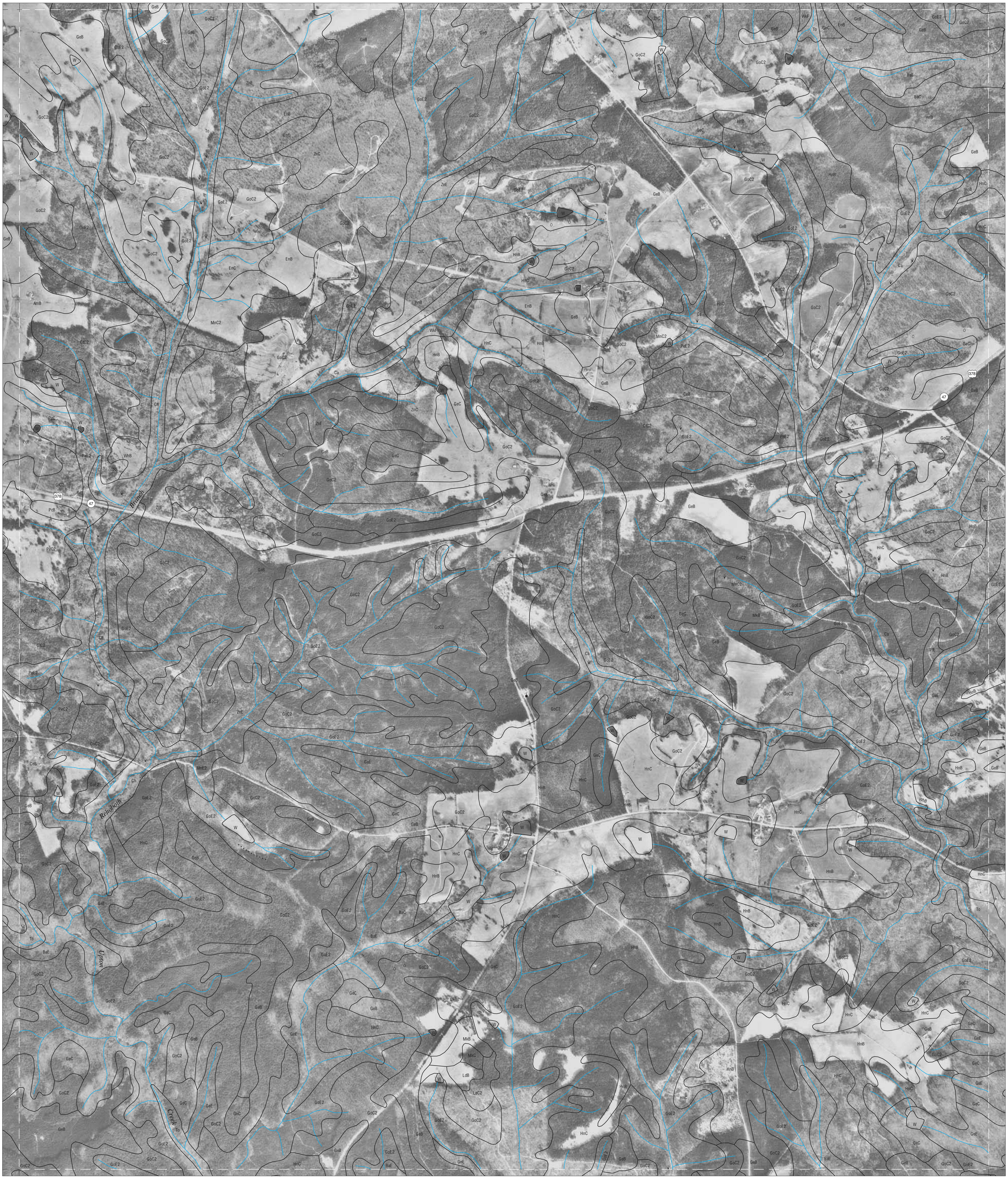
Joins sheet 32, Metasville SW

Joins sheet 33, Metasville SE

82° 37′30″ 82° 33′45″

33° 45′00″ 33° 45′00″

Joins sheet 44, Washington East NE



Joins sheet 46, Aonia NE

33° 41′15″ 33° 41′15″

82° 37′30″ 82° 33′45″

Joins sheet 56, Washington East SE

Joins sheet 57, Aonia SW

Joins sheet 58, Aonia SE

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1993 and 1994 aerial photography. Cultural and hydrography annotation was acquired from the U.S. Department of Interior, Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

31	32	33
44		46
56	57	58

31 TIGNALL SE
32 METASVILLE SW
33 METASVILLE SE
44 WASHINGTON EAST NE
46 AONIA NE
56 WASHINGTON EAST SE
57 AONIA SW
58 AONIA SE

INDEX TO ADJOINING 3.75 MAPS

AONIA NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 45 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

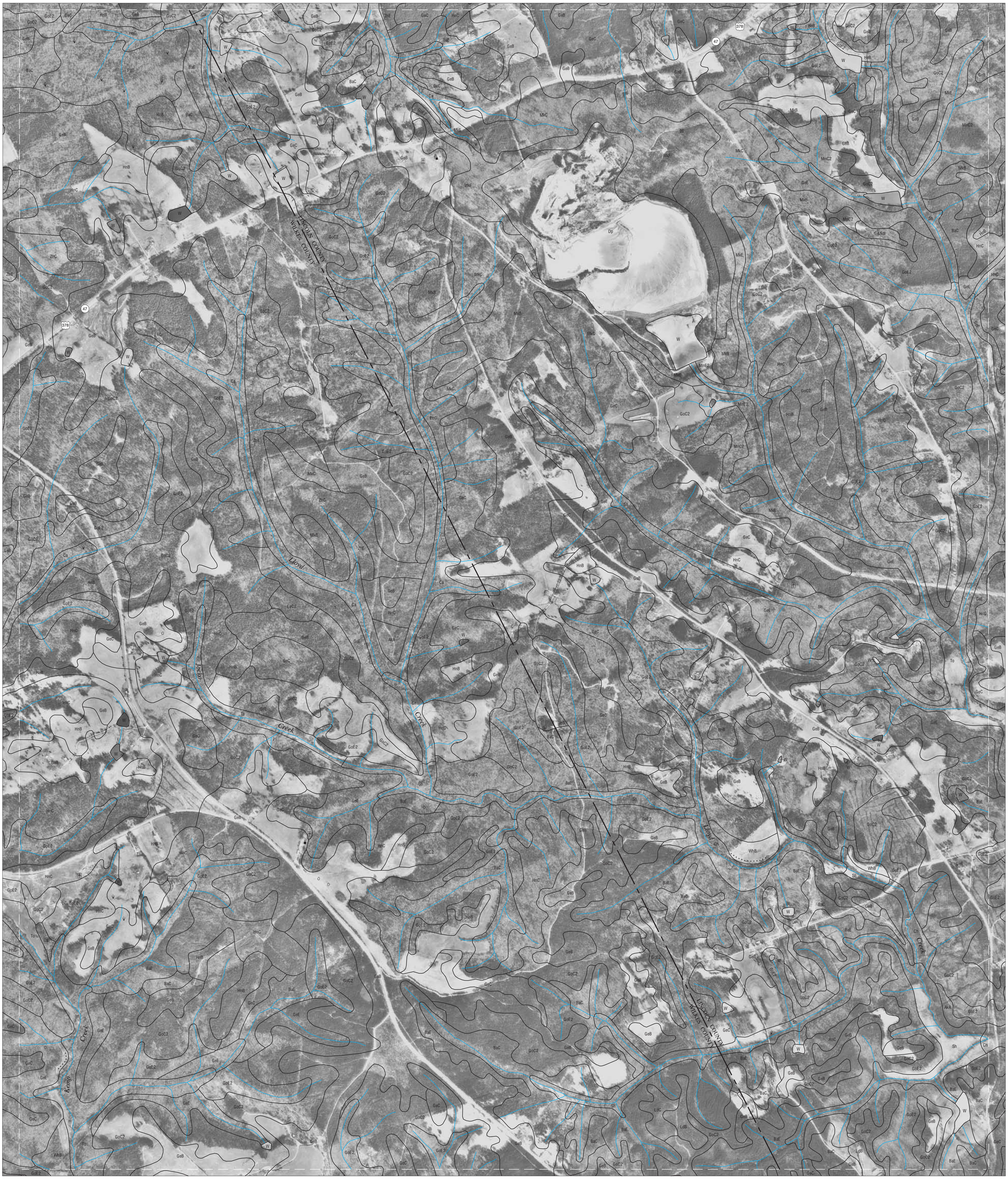
Joins sheet 32, Metasville SW

Joins sheet 33, Metasville SE

Joins sheet 34, Lincolnton SW

82° 33′45″ 82° 30′00″
33° 45′00″ 33° 45′00″

Joins sheet 45, Aonia NW



Joins sheet 47, Woodlawn NW

33° 41′15″ 33° 41′15″
82° 33′45″ 82° 30′00″

Joins sheet 57, Aonia SW

Joins sheet 58, Aonia SE

Joins sheet 59, Woodlawn SW

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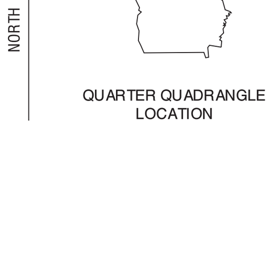
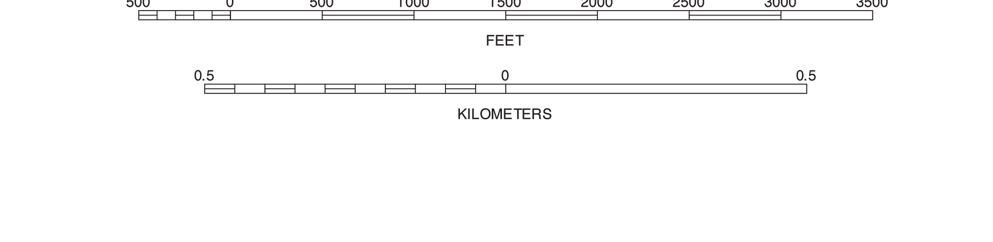
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



32	33	34
45		47
57	58	59

32 METASVILLE SW
33 METASVILLE SE
34 LINCOLNTON SW
45 AONIA NW
47 WOODLAWN NW
57 AONIA SW
58 AONIA SE
59 WOODLAWN SW

INDEX TO ADJOINING 3.75 MAPS

AONIA NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 46 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 33, Metasville SE

Joins sheet 34, Lincolnton SW

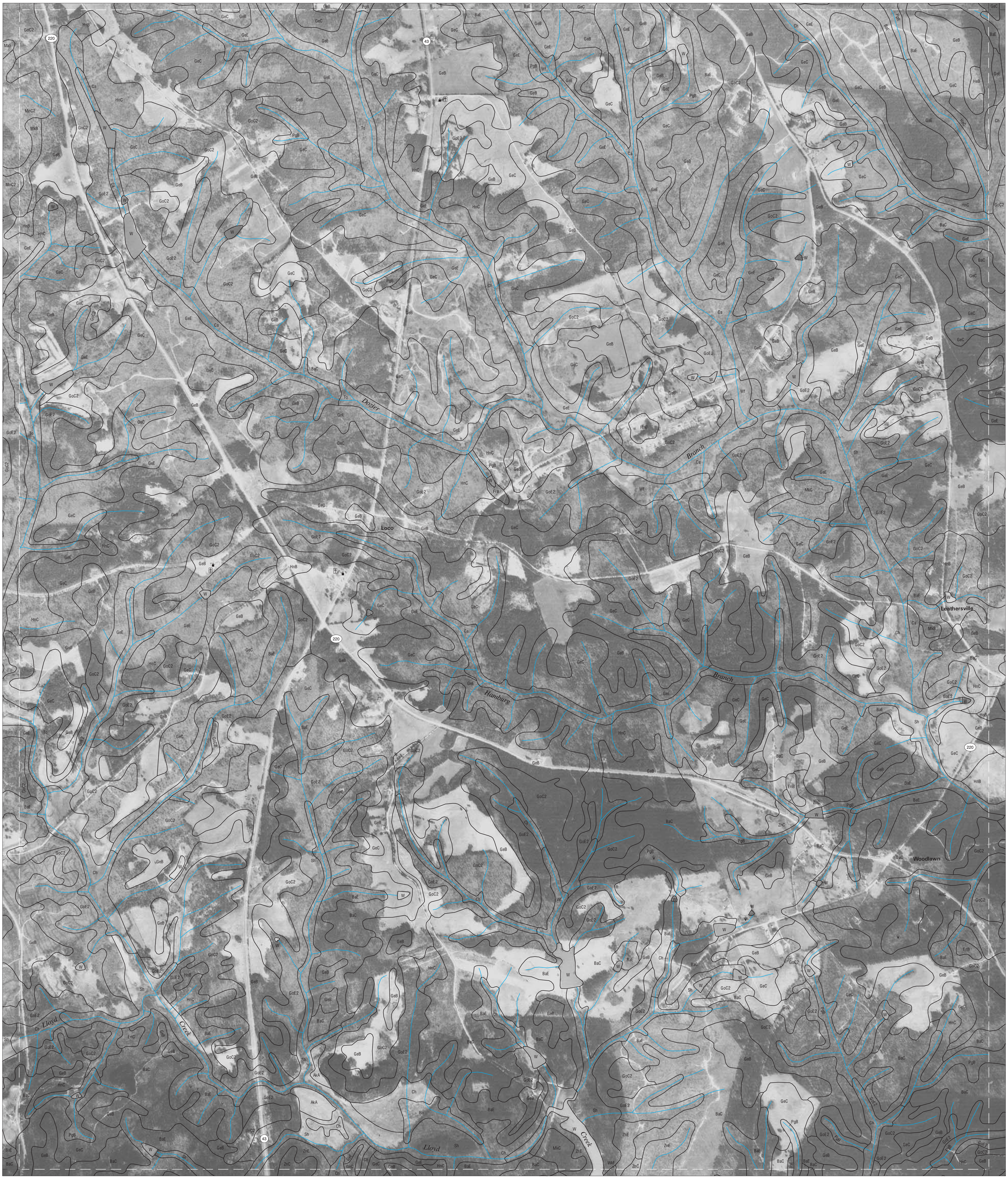
Joins sheet 35, Lincolnton SE

82° 30′00″ 82° 26′15″

33° 45′00″ 33° 45′00″

Joins sheet 46, Aonia NE

Joins sheet 48, Woodlawn NE



33° 41′15″ 33° 41′15″

82° 30′00″ 82° 26′15″

Joins sheet 58, Aonia SE

Joins sheet 59, Woodlawn SW

Joins sheet 60, Woodlawn SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

33	34	35
46		48
58	59	60

33 METASVILLE SE
34 LINCOLNTON SW
35 LINCOLNTON SE
46 AONIA NE
48 WOODLAWN NE
58 AONIA SE
59 WOODLAWN SW
60 WOODLAWN SE

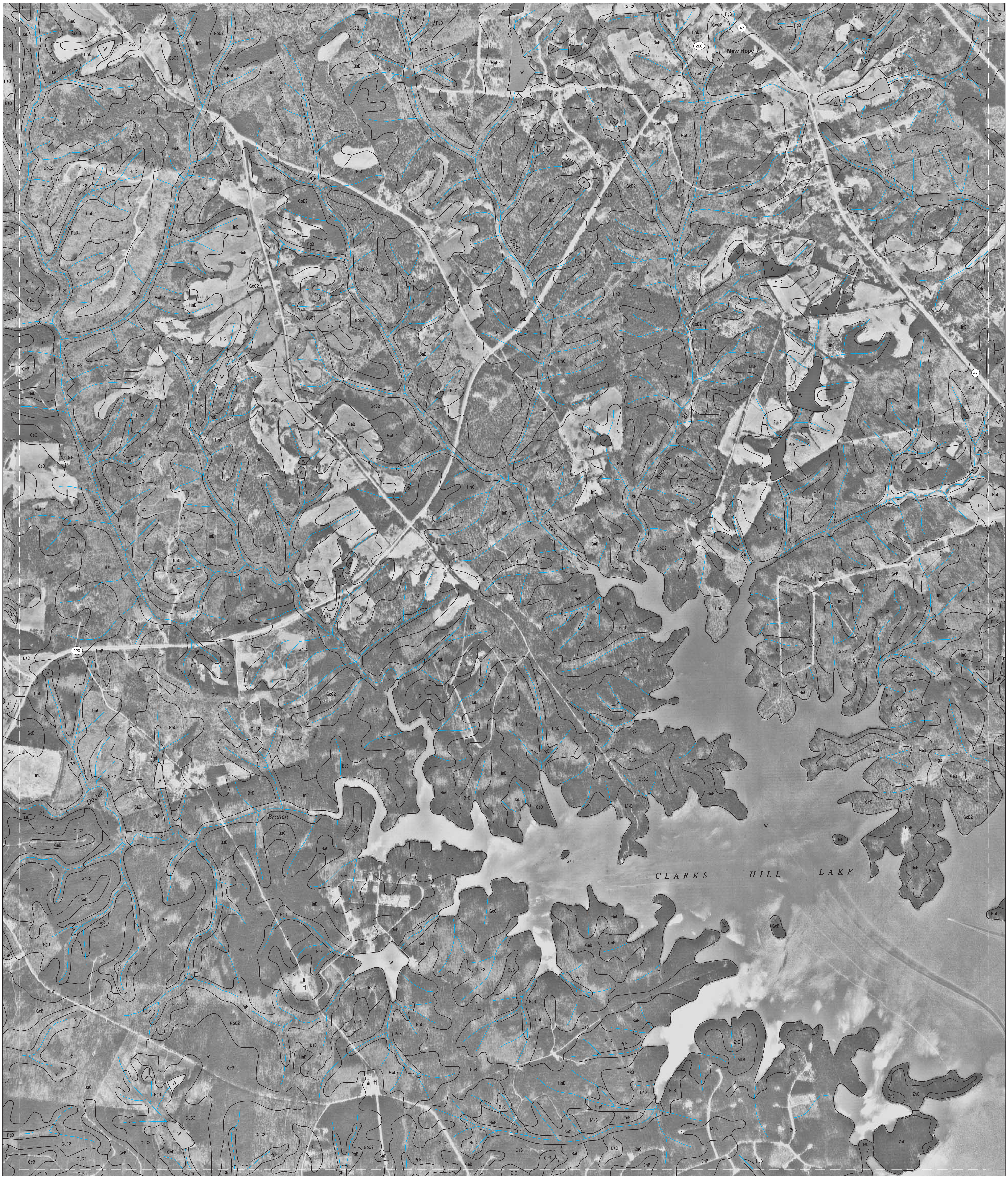
INDEX TO ADJOINING 3.75 MAPS

WOODLAWN NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 47 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
WOODLAWN NE QUADRANGLE
SHEET NUMBER 48 OF 69



SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

NORTH

QUARTER QUADRANGLE LOCATION

34	35	36
47		49
59	60	61

34 LINCOLNTON SW
35 LINCOLNTON SE
36 PLUM BRANCH SW
47 WOODLAWN NW
49 LEAH NW
59 WOODLAWN SW
60 WOODLAWN SE
61 LEAH SW

INDEX TO ADJOINING 3.75 MAPS

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1993 and 1994 aerial photography. Cultural and hydrography annotation was acquired from the U.S. Department of Interior, Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

WOODLAWN NE, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 48 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
LEAH NW QUADRANGLE
SHEET NUMBER 49 OF 69

Joins sheet 35, Lincolnton SE

Joins sheet 36, Plum Branch SW

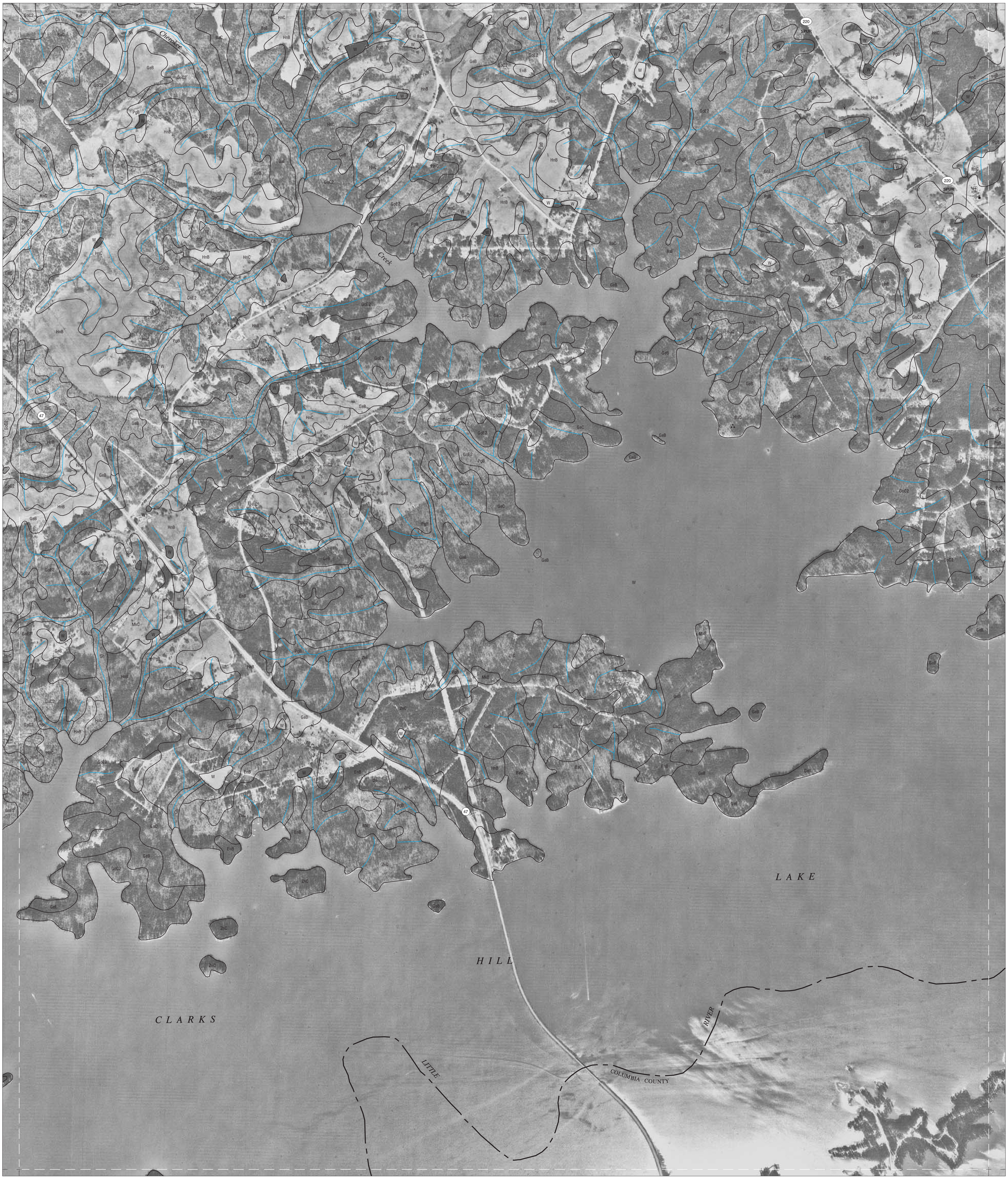
Joins sheet 37, Plum Branch SE

82° 22′30″ 82°18′45″

33° 45′00″ 33° 45′00″

Joins sheet 48, Woodlawn NE

Joins sheet 50, Leah NE



33° 41′15″ 33° 41′15″

82° 22′30″ 82°18′45″

Joins sheet 60, Woodlawn SE

Joins sheet 61, Leah SW

Joins sheet 62, Leah SE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

35	36	37
48		50
60	61	62

35 LINCOLNTON SE
36 PLUM BRANCH SW
37 PLUM BRANCH SE
48 WOODLAWN NE
50 LEAH NE
60 WOODLAWN SE
61 LEAH SW
62 LEAH SE

INDEX TO ADJOINING 3.75 MAPS

LEAH NW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 49 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
LEAH NE QUADRANGLE
SHEET NUMBER 50 OF 69

Joins sheet 36, Plum Branch SW

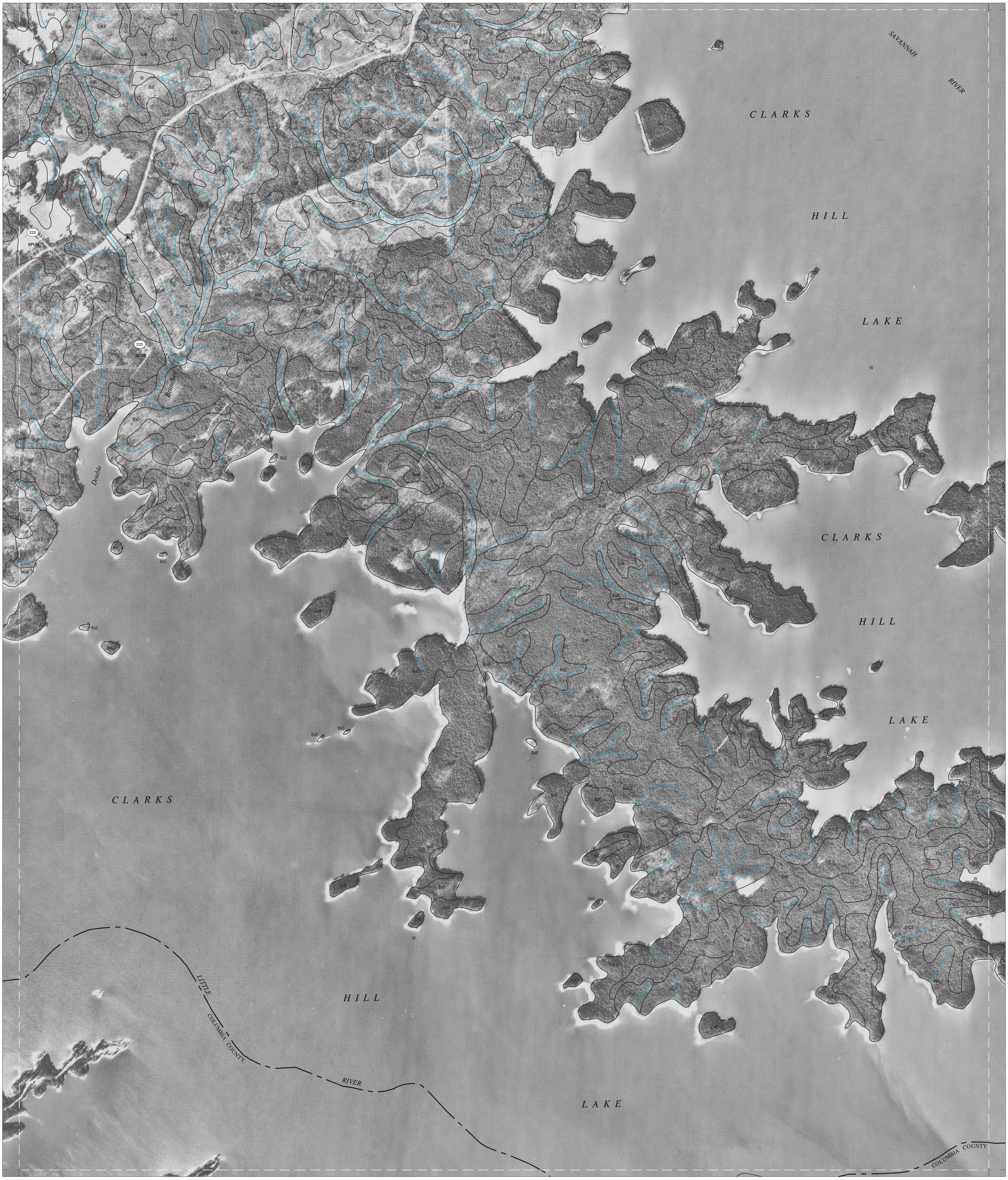
Joins sheet 37, Plum Branch SE

Joins sheet 38, Parksville SW

82°18′45″ 82°15′00″

33°45′00″ 33°45′00″

Joins sheet 49, Leah NW



Joins sheet 51, Clarks Hill NW

33°41′15″ 33°41′15″

82°18′45″ 82°15′00″

Joins sheet 61, Leah SW

Joins sheet 62, Leah SE

Joins sheet 63, Clarks Hill SW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

36	37	38
49		51
61	62	63

36 PLUM BRANCH SW
37 PLUM BRANCH SE
38 PARKSVILLE SW
49 LEAH NW
51 CLARKS HILL NW
61 LEAH SW
62 LEAH SE
63 CLARKS HILL SW

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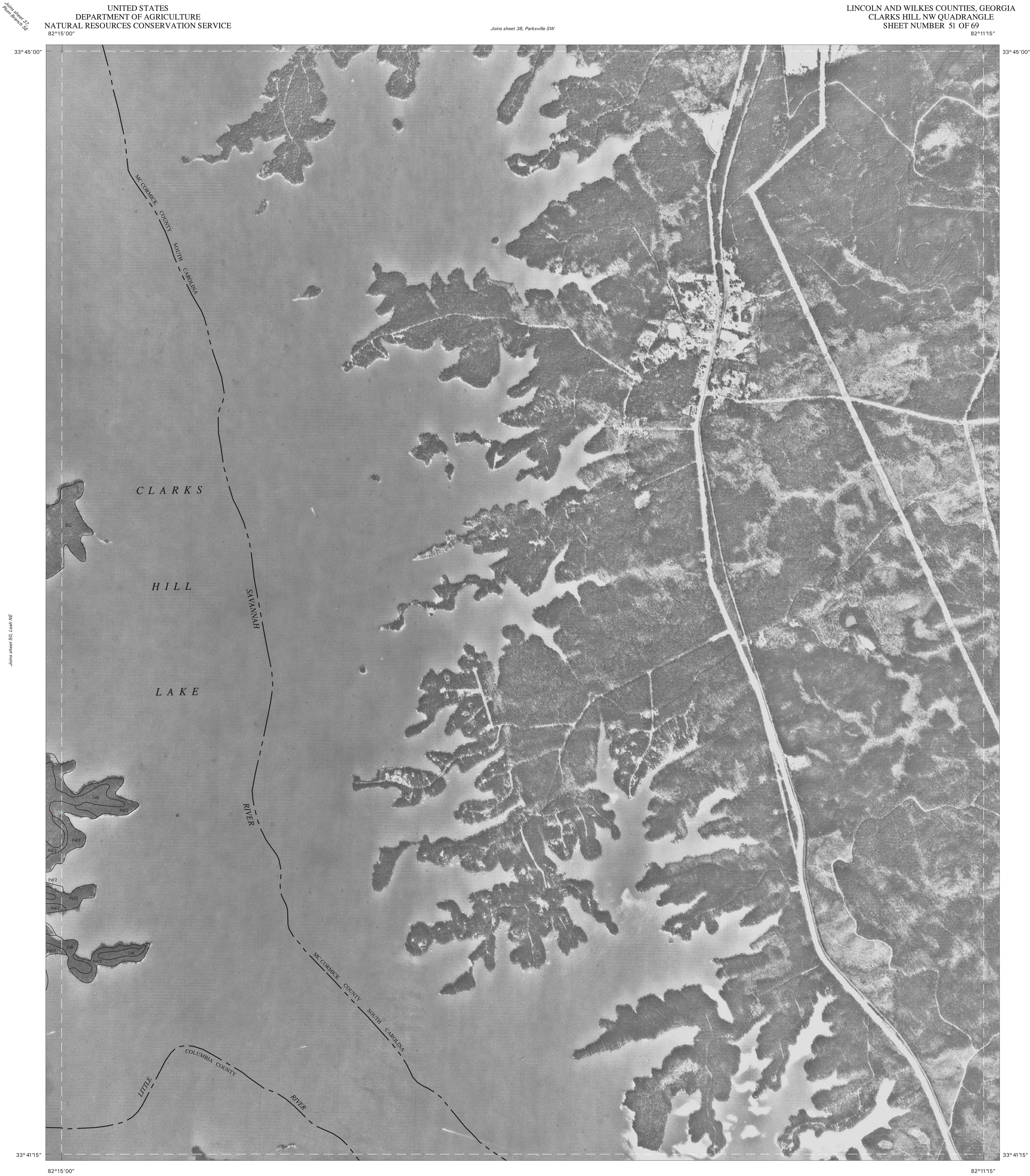
LEAH NE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 50 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
CLARKS HILL NW QUADRANGLE
SHEET NUMBER 51 OF 69



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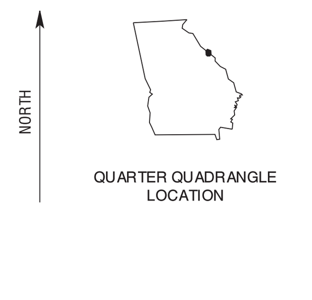
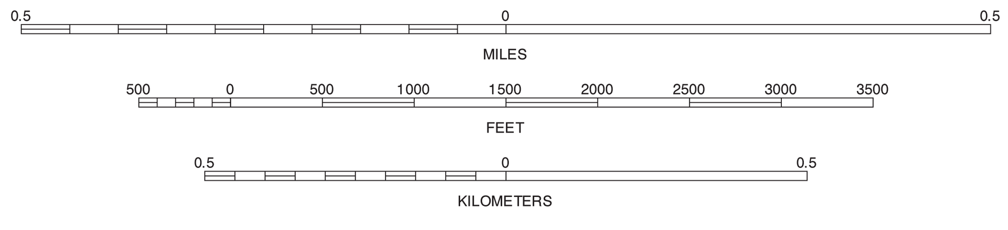
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



37	38	
50		
62	63	

37 PLUM BRANCH SE
38 PARKSVILLE SW
50 LEAH NE
62 LEAH SE
63 CLARKS HILL SW

INDEX TO ADJOINING 3.75 MAPS

CLARKS HILL NW, GEORGIA

3.75 MINUTE SERIES
SHEET NUMBER 51 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
PHILOMATH SE QUADRANGLE
SHEET NUMBER 52 OF 69

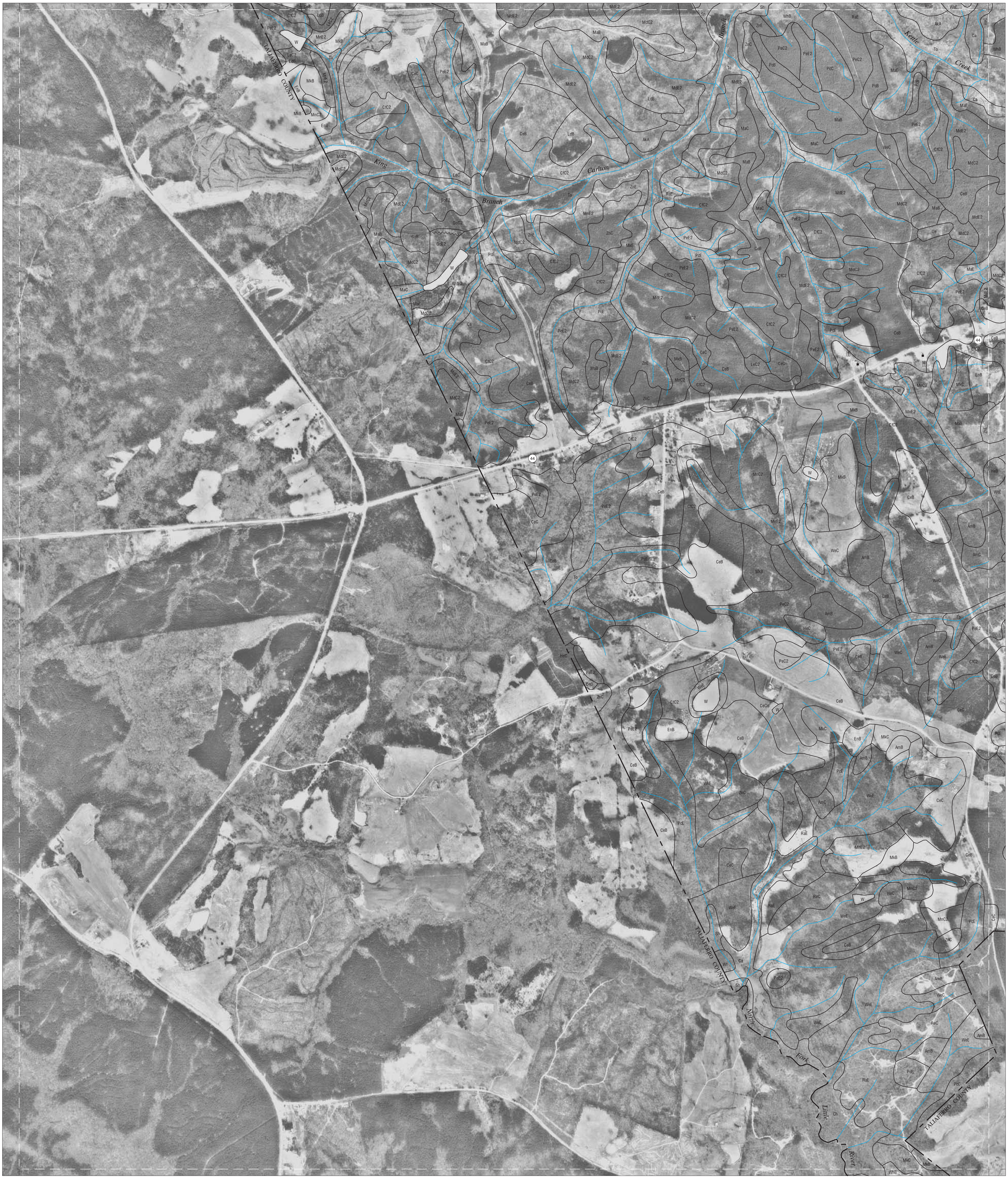
Joins sheet 39, Philomath NW

Joins sheet 40, Philomath NE

Joins sheet 41, Washington West NW

82° 56′15″ 82° 52′30″

33° 41′15″ 33° 41′15″



Joins sheet 53, Washington West SW

33° 37′30″ 33° 37′30″

82° 56′15″ 82° 52′30″

Joins sheet 64, Crawfordville NE

Joins sheet 65, Sharon NW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

39	40	41
		53
	64	65

39 PHILOMATH NW
40 PHILOMATH NE
41 WASHINGTON WEST NW
53 WASHINGTON WEST SW
64 CRAWFORDVILLE NE
65 SHARON NW

INDEX TO ADJOINING 3.75 MAPS

PHILOMATH SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 52 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

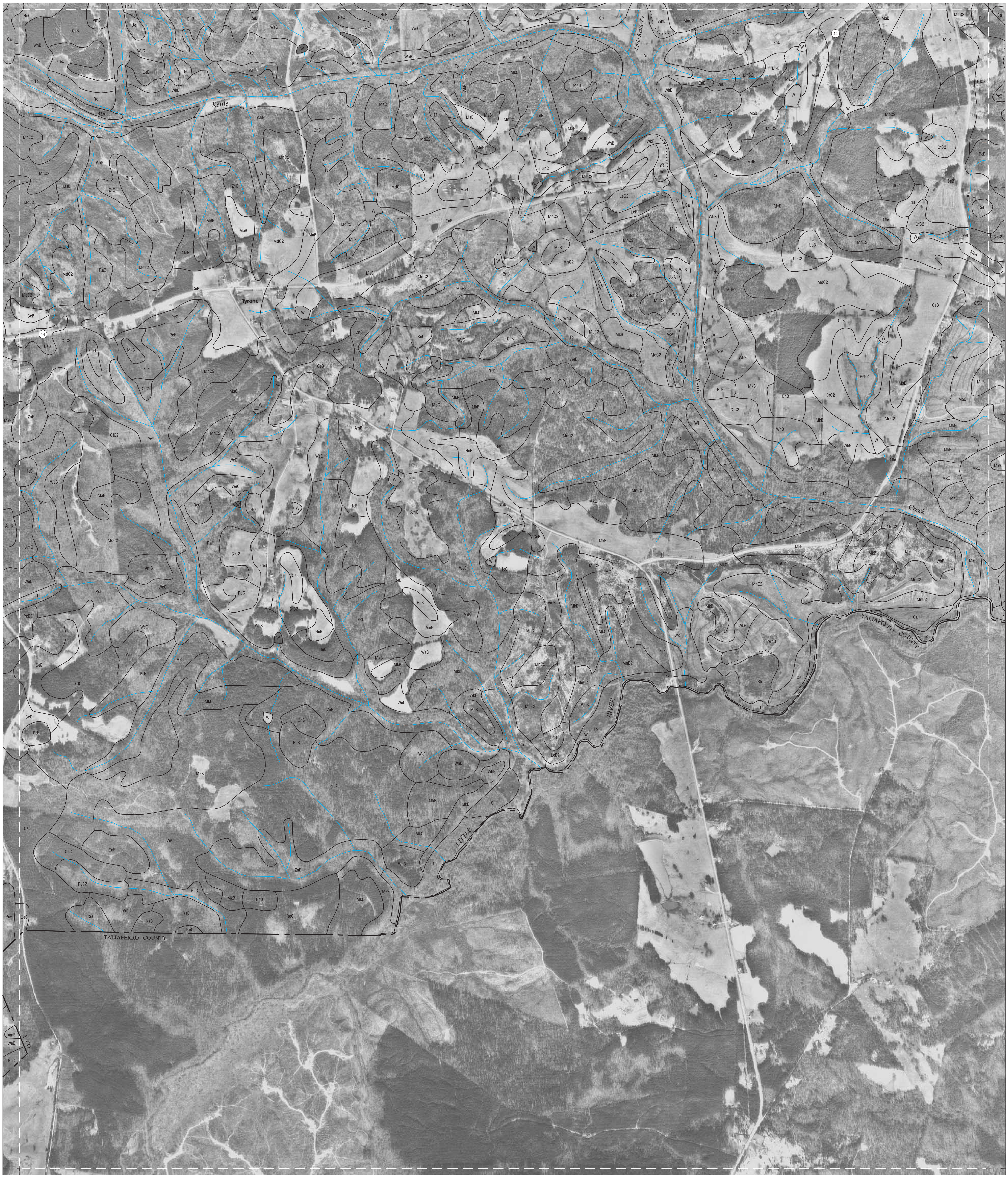
Joins sheet 40, Philomath NE

Joins sheet 41, Washington West NW

Joins sheet 42, Washington West NE

82° 52′30″ 82° 48′45″

33° 41′15″ 33° 41′15″



Joins sheet 52, Philomath SE

Joins sheet 54, Washington West SE

33° 37′30″ 33° 37′30″

82° 52′30″ 82° 48′45″

Joins sheet 64, Crawfordville NE

Joins sheet 65, Sharon NW

Joins sheet 66, Sharon NE

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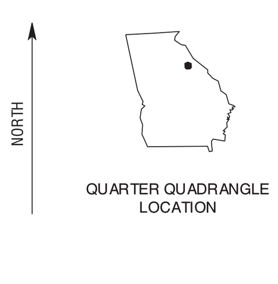
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

40	41	42
52		54
64	65	66

40 PHILOMATH NE
41 WASHINGTON WEST NW
42 WASHINGTON WEST NE
52 PHILOMATH SE
54 WASHINGTON WEST SE
64 CRAWFORDVILLE NE
65 SHARON NW
66 SHARON NE

INDEX TO ADJOINING 3.75 MAPS

WASHINGTON WEST SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 53 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
WASHINGTON WEST SE QUADRANGLE
SHEET NUMBER 54 OF 69

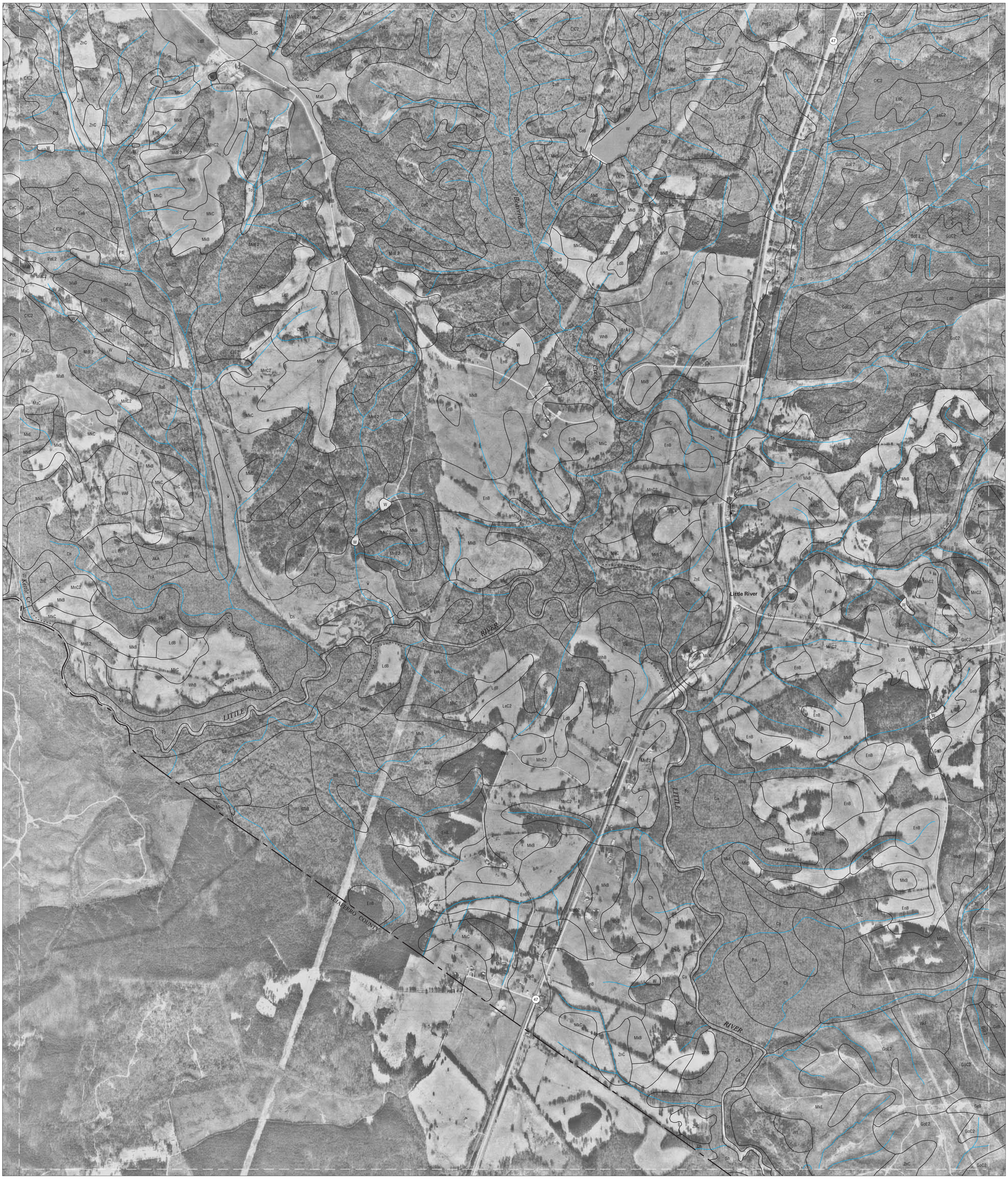
Joins sheet 41, Washington West NW

Joins sheet 42, Washington West NE

Joins sheet 43, Washington East NW

82° 48′ 45″ 82° 45′ 00″

33° 41′15″ 33° 41′15″



33° 37′30″ 33° 37′30″

82° 48′ 45″ 82° 45′ 00″

Joins sheet 53, Washington West SW

Joins sheet 55, Washington East SW

Joins sheet 65, Sharon NW

Joins sheet 66, Sharon NE

Joins sheet 67, Cadley NW

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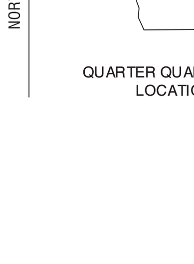
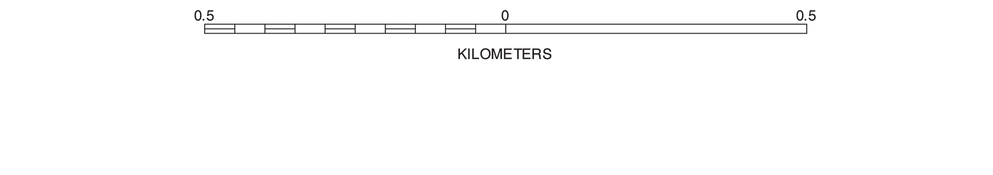
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



41	42	43
53		55
65	66	67

41 WASHINGTON WEST NW
42 WASHINGTON WEST NE
43 WASHINGTON EAST NW
53 WASHINGTON WEST SW
55 WASHINGTON EAST SW
65 SHARON NW
66 SHARON NE
67 CADLEY NW

INDEX TO ADJOINING 3.75 MAPS

WASHINGTON WEST SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 54 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 42, Washington West NE

Joins sheet 43, Washington East NW

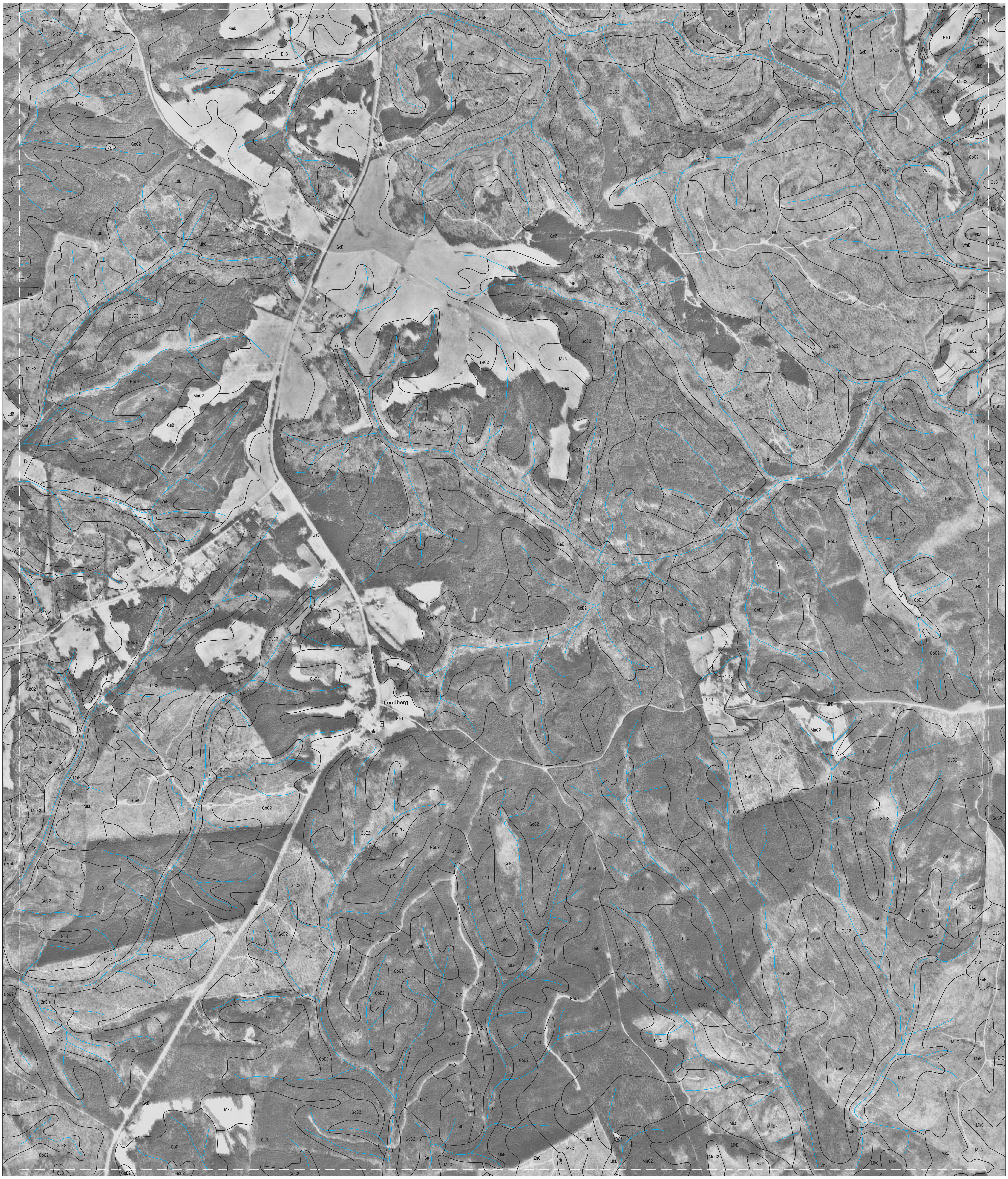
Joins sheet 44, Washington East NE

82° 45′00″ 82° 41′15″

33° 41′15″ 33° 41′15″

Joins sheet 54, Washington West SE

Joins sheet 56, Washington East SE



33° 37′30″ 33° 37′30″

82° 45′00″ 82° 41′15″

Joins sheet 66, Sharon NE

Joins sheet 67, Cadley NW

Joins sheet 68, Cadley NE

SCALE 1:12000

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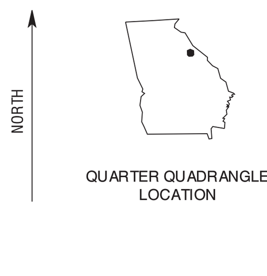
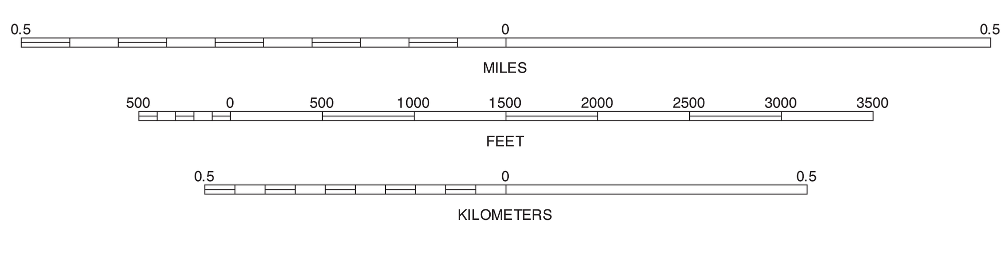
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION



42	43	44
54		56
66	67	68

42 WASHINGTON WEST NE
43 WASHINGTON EAST NW
44 WASHINGTON EAST NE
54 WASHINGTON WEST SE
56 WASHINGTON EAST SE
66 SHARON NE
67 CADLEY NW
68 CADLEY NE

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WASHINGTON EAST SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 55 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 43, Washington East NW

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
WASHINGTON EAST SE QUADRANGLE
SHEET NUMBER 56 OF 69

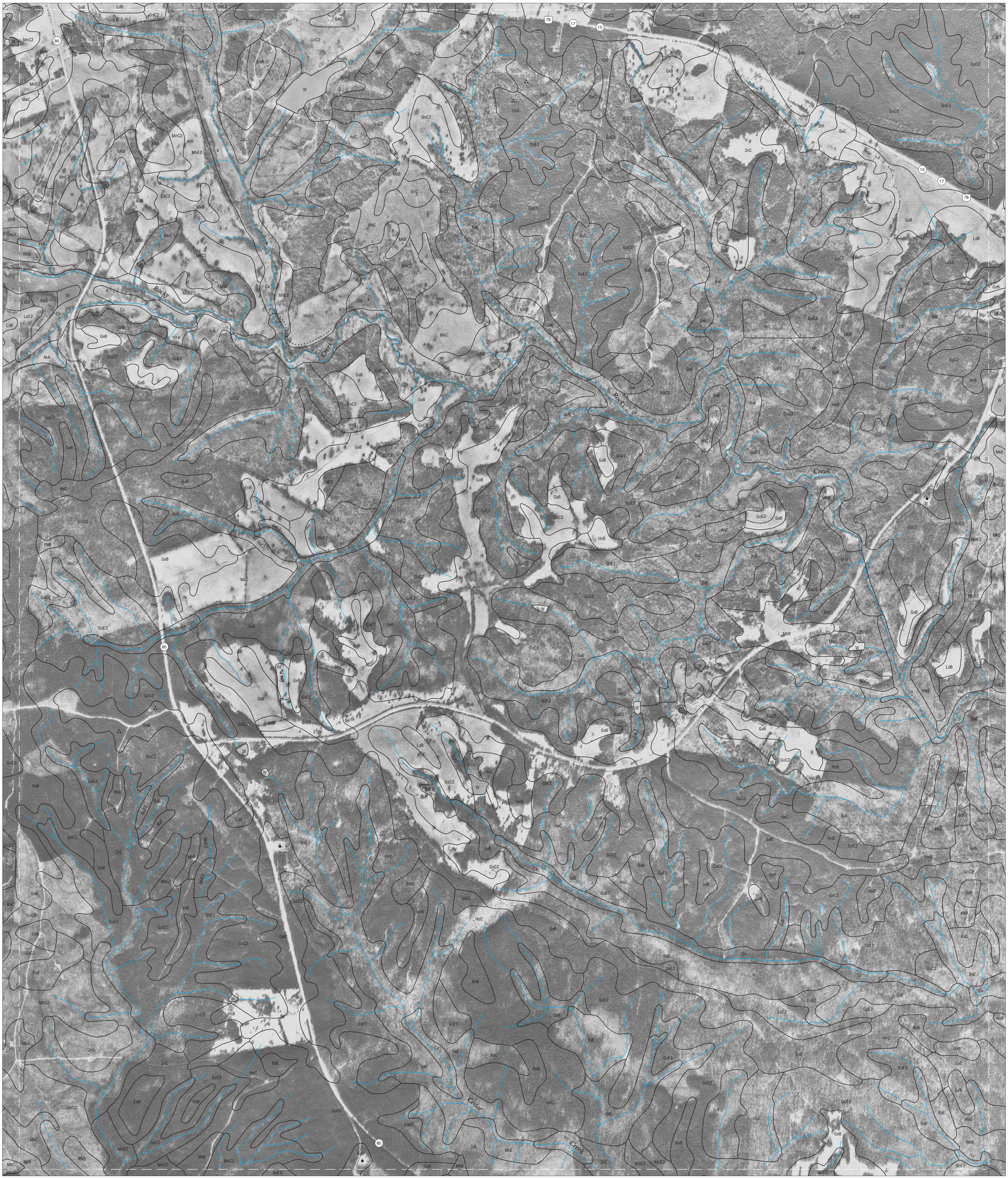
Joins sheet 45, Aonia NW

Joins sheet 44, Washington East NE

82° 41'15" 82° 37'30"

33° 41'15" 33° 41'15"

Joins sheet 55, Washington East SW



Joins sheet 57, Aonia SW

33° 37'30" 33° 37'30"

82° 41'15" 82° 37'30"

Joins sheet 67, Cadley NW

Joins sheet 68, Cadley NE

Joins sheet 69, Wrightsboro NW

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

43	44	45
55		57
67	68	69

43 WASHINGTON EAST NW
44 WASHINGTON EAST NE
45 AONIA NW
55 WASHINGTON EAST SW
57 AONIA SW
67 CADLEY NW
68 CADLEY NE
69 WRIGHTSBORO NW

INDEX TO ADJOINING 3.75 MAPS

WASHINGTON EAST SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 56 OF 69

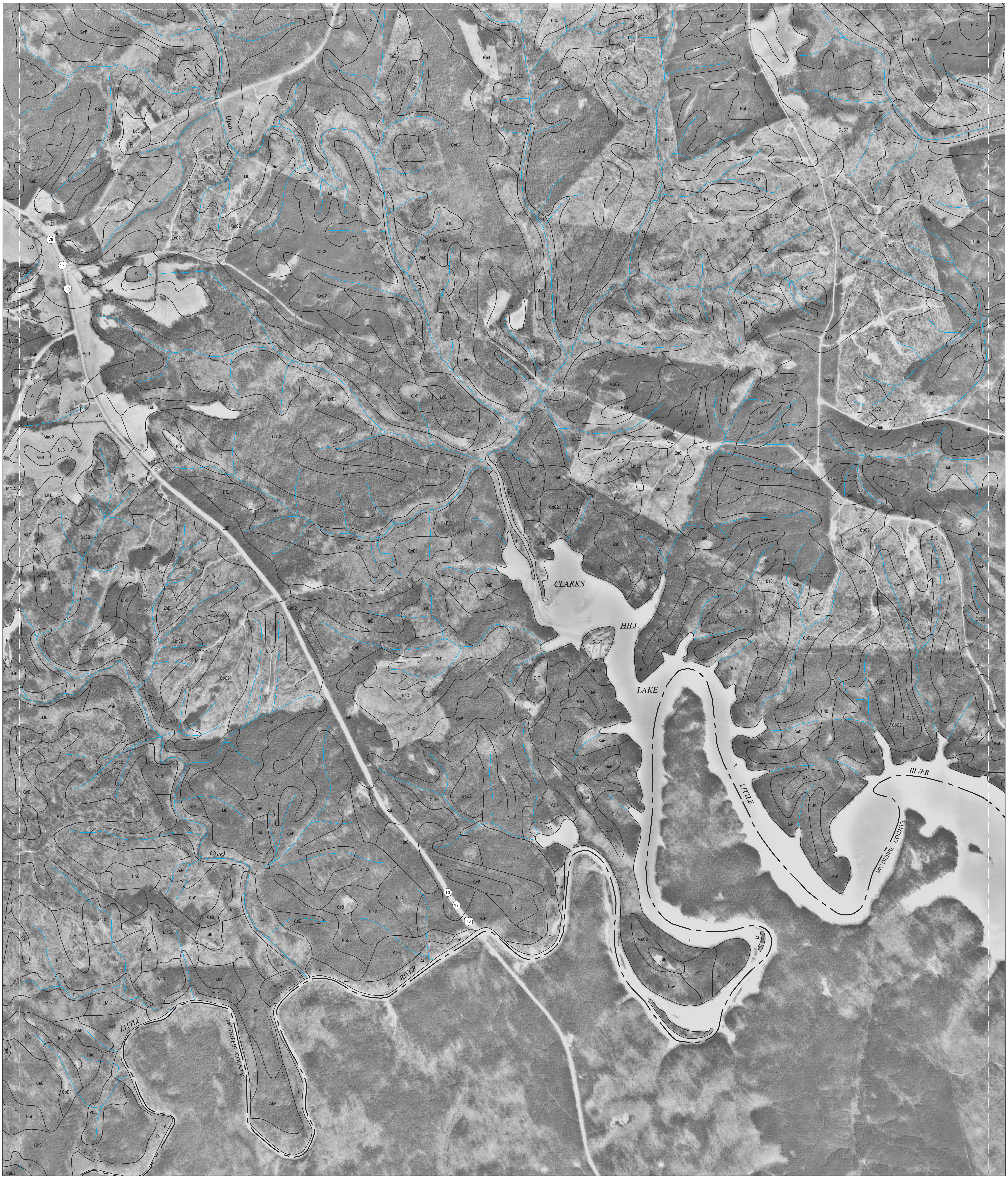
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
AONIA SW QUADRANGLE
SHEET NUMBER 57 OF 69

82° 37′30″ 33° 41′15″ 82° 33′45″ 33° 41′15″

Joins sheet 56, Washington East SE



Joins sheet 58, Aonia SE

33° 37′30″ 82° 37′30″ 33° 37′30″ 82° 33′45″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

44	45	46
56		58
68	69	

44 WASHINGTON EAST NE
45 AONIA NW
46 AONIA NE
56 WASHINGTON EAST SE
58 AONIA SE
68 CADLEY NE
69 WRIGHTSBORO NW

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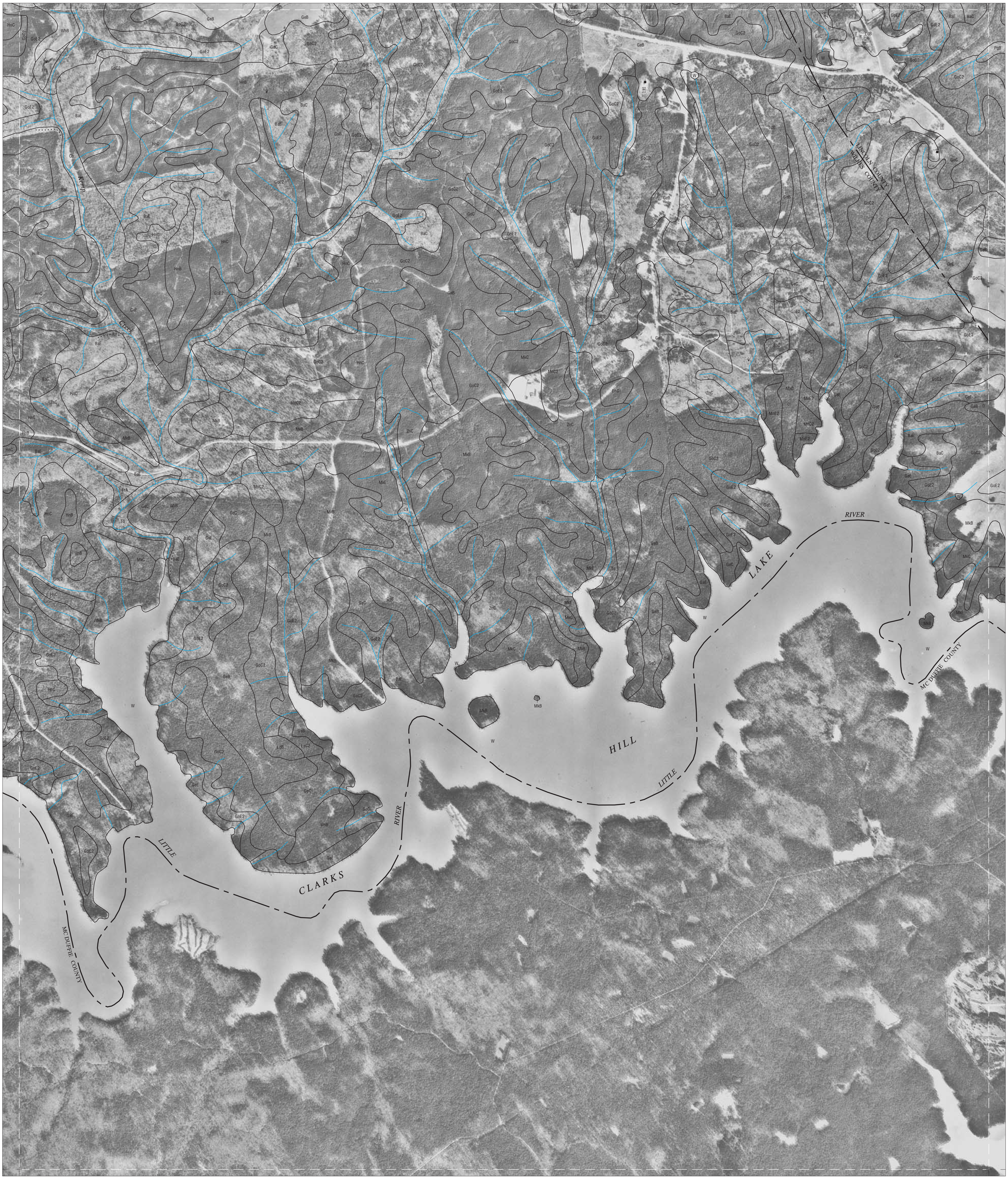
AONIA SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 57 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



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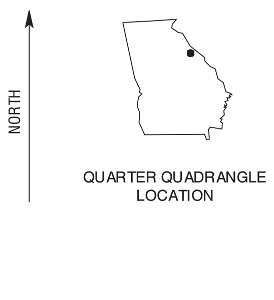
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



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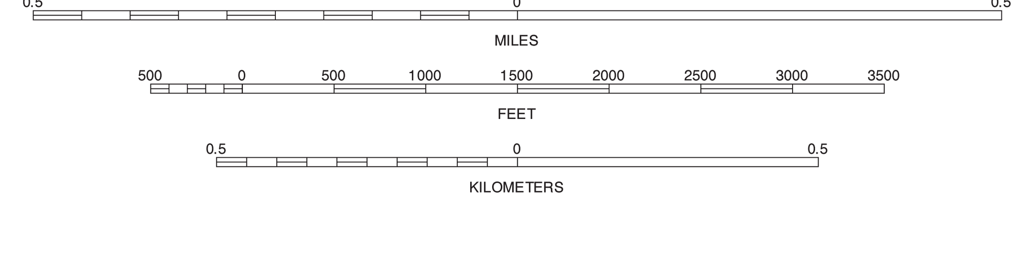

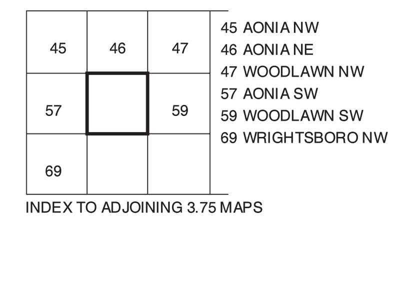

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AONIA SE, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 58 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
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NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
WOODLAWN SW QUADRANGLE
SHEET NUMBER 59 OF 69

Joins sheet 46, Aonia NE

Joins sheet 47, Woodlawn NW

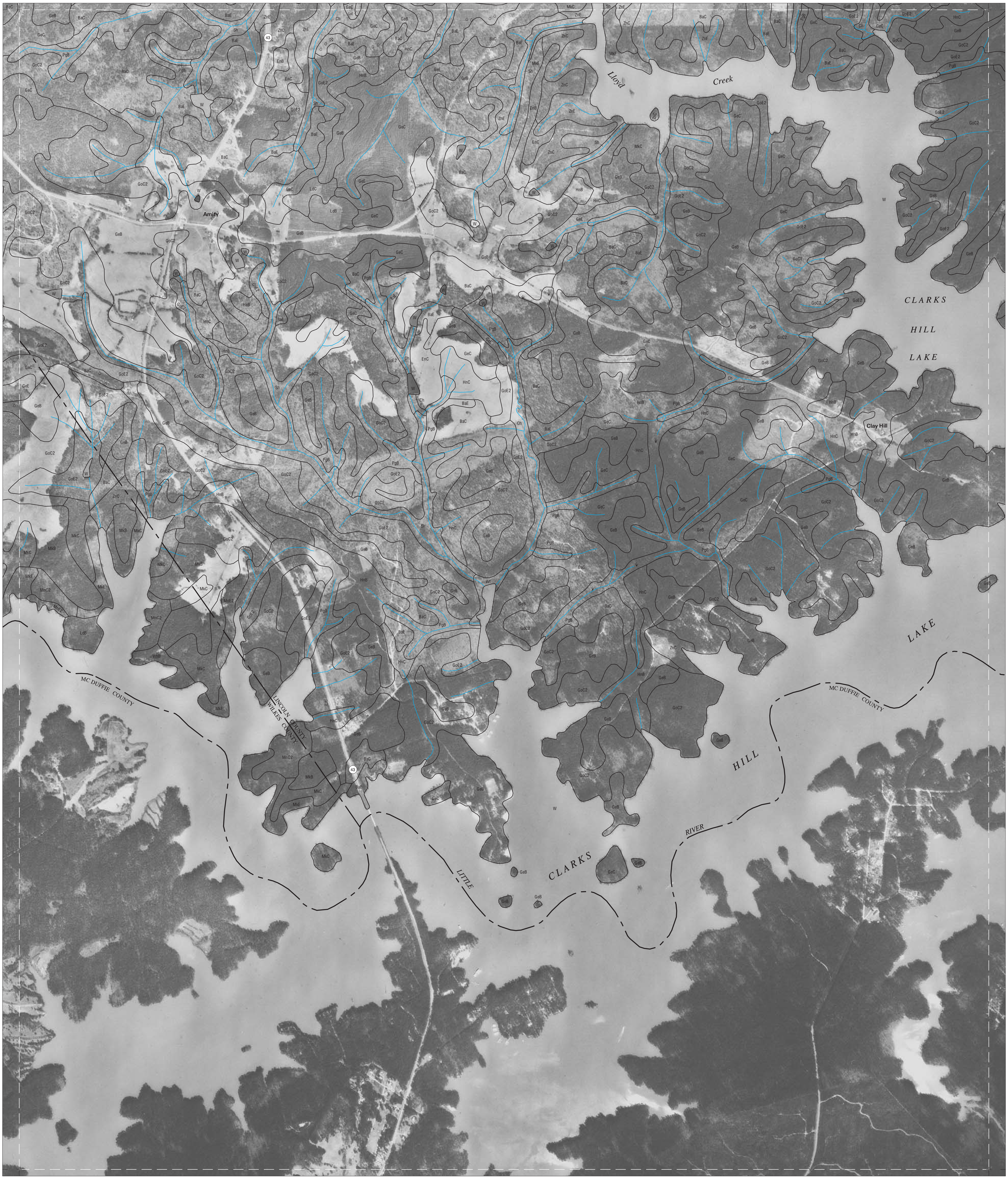
Joins sheet 48, Woodlawn NE

82° 30′00″ 33° 41′15″

82° 26′15″ 33° 41′15″

Joins sheet 58, Aonia SE

Joins sheet 60, Woodlawn SE



33° 37′30″ 82° 30′00″

33° 37′30″ 82° 26′15″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

46	47	48
58		60

46 AONIA NE
47 WOODLAWN NW
48 WOODLAWN NE
58 AONIA SE
60 WOODLAWN SE

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WOODLAWN SW, GEORGIA
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SHEET NUMBER 59 OF 69

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LINCOLN AND WILKES COUNTIES, GEORGIA
WOODLAWN SE QUADRANGLE
SHEET NUMBER 60 OF 69

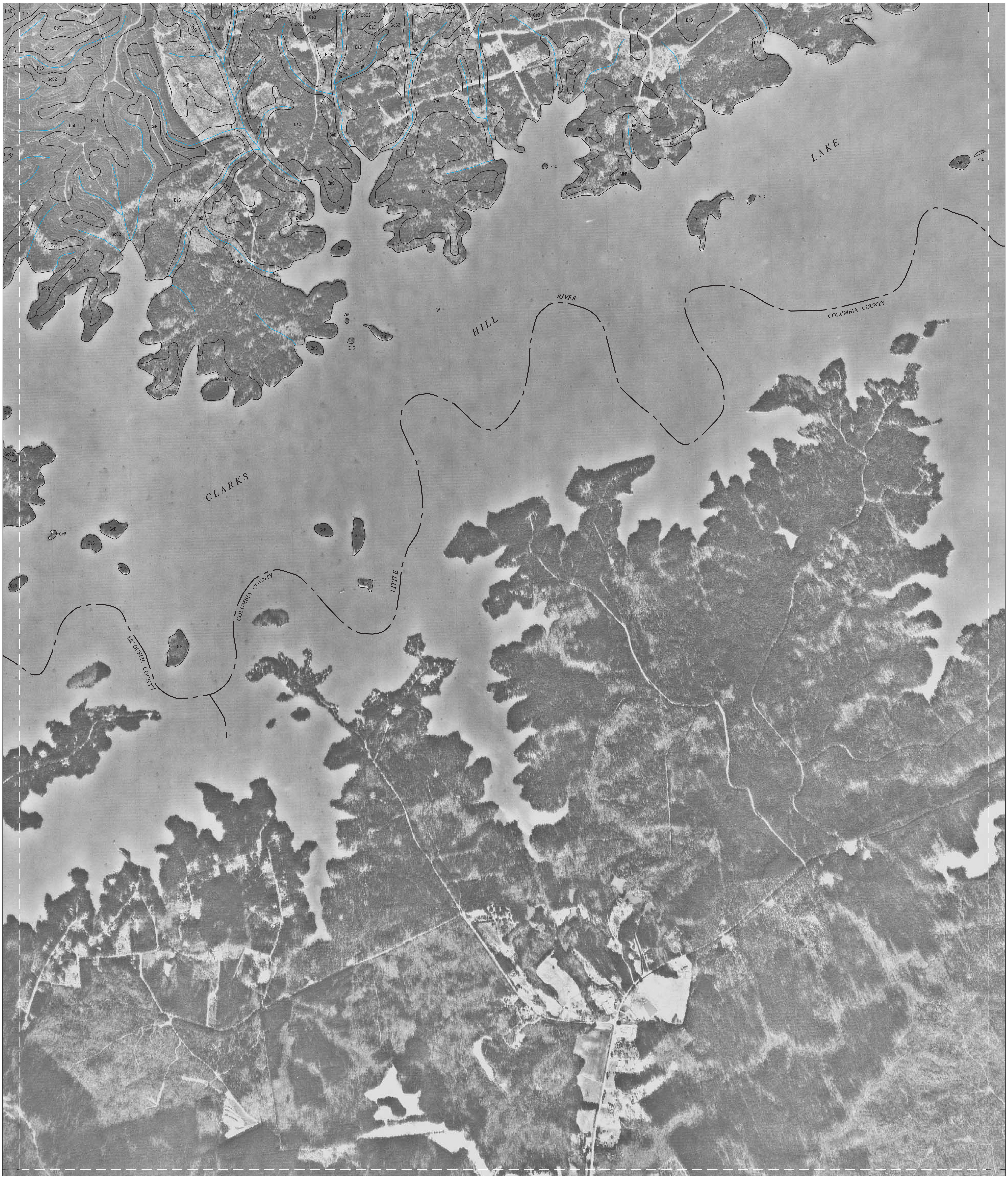
Joins sheet 47, Woodlawn NW

Joins sheet 48, Woodlawn NE

Joins sheet 49, Leah NW

82° 26′15″ 82° 22′30″

33° 41′15″ 33° 41′15″



Joins sheet 59, Woodlawn SW

Joins sheet 61, Leah SW

33° 37′30″ 33° 37′30″

82° 26′15″ 82° 22′30″

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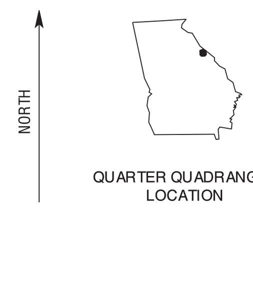
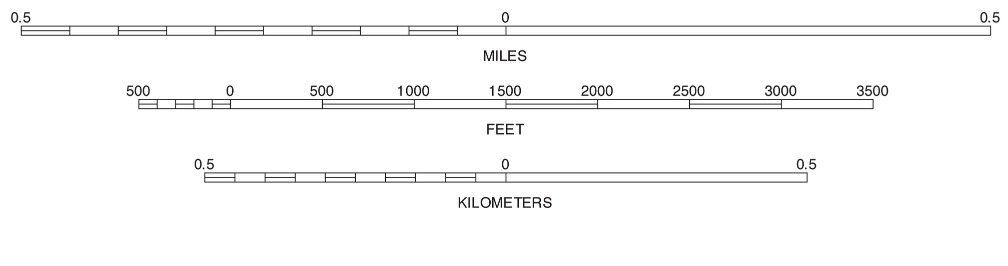
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



47	48	49
59		61

47 WOODLAWN NW
48 WOODLAWN NE
49 LEAH NW
59 WOODLAWN SW
61 LEAH SW

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WOODLAWN SE, GEORGIA
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LINCOLN AND WILKES COUNTIES, GEORGIA
LEAH SW QUADRANGLE
SHEET NUMBER 61 OF 69

Joins sheet 48, Woodlawn NE
Joins sheet 49, Leah NW
Joins sheet 50, Leah NE

82° 22′30″
82°18′45″
33° 41′15″
33° 41′15″

Joins sheet 60, Woodlawn SE
Joins sheet 62, Leah SE

33° 37′30″
33° 37′30″
82° 22′30″
82°18′45″

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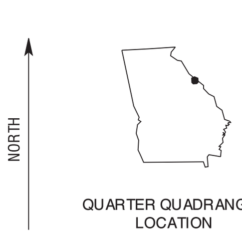
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

48	49	50
60		62

48 WOODLAWN NE
49 LEAH NW
50 LEAH NE
60 WOODLAWN SE
62 LEAH SE

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LEAH SW, GEORGIA
3.75 MINUTE SERIES
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DEPARTMENT OF AGRICULTURE
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LINCOLN AND WILKES COUNTIES, GEORGIA
LEAH SE QUADRANGLE
SHEET NUMBER 62 OF 69

Joins sheet 49, Leah NW

Joins sheet 50, Leah NE

Joins sheet 51, Clarks Hill NW

82°18′45″ 82°15′00″

33° 41′15″ 33° 41′15″

Joins sheet 61, Leah SW

Joins sheet 63, Clarks Hill SW

33° 37′30″ 33° 37′30″

82°18′45″ 82°15′00″

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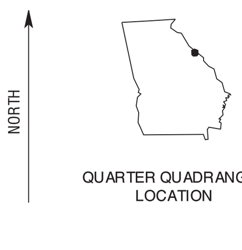
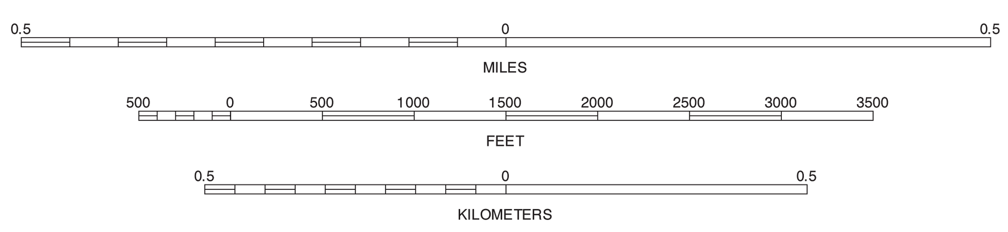
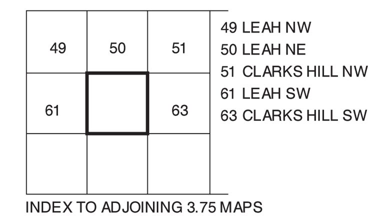
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



QUARTER QUADRANGLE
LOCATION

SCALE 1:12000





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LEAH SE, GEORGIA
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LINCOLN AND WILKES COUNTIES, GEORGIA
CLARKS HILL SW QUADRANGLE

Joins sheet 50, Leah NE

Joins sheet 51, Clarks Hill NW

Joins sheet 62, Leah SE

82°15′00″ 82°11′15″

33°41′15″ 33°41′15″

33°37′30″ 33°37′30″

82°15′00″ 82°11′15″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

50	51	
62		

50 LEAH NE
51 CLARKS HILL NW
62 LEAH SE

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CLARKS HILL SW, GEORGIA
3.75 MINUTE SERIES
SHEET NUMBER 63 OF 69

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LINCOLN AND WILKES COUNTIES, GEORGIA
CRAWFORDVILLE NE QUADRANGLE
SHEET NUMBER 64 OF 69

Joins sheet 52, Philomath SE

Joins sheet 53, Washington West SW

82° 56′15″ 82° 52′30″

33° 37′30″ 33° 37′30″

Joins sheet 65, Sharon NW

33° 33′45″ 33° 33′45″

82° 56′15″ 82° 52′30″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

	52	53	
	■	65	

52 PHILOMATH SE
53 WASHINGTON WEST SW
65 SHARON NW

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CRAWFORDVILLE NE, GEORGIA
3.75 MINUTE SERIES
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LINCOLN AND WILKES COUNTIES, GEORGIA
SHARON NW QUADRANGLE
SHEET NUMBER 65 OF 69

Joins sheet 52, Philomath SE

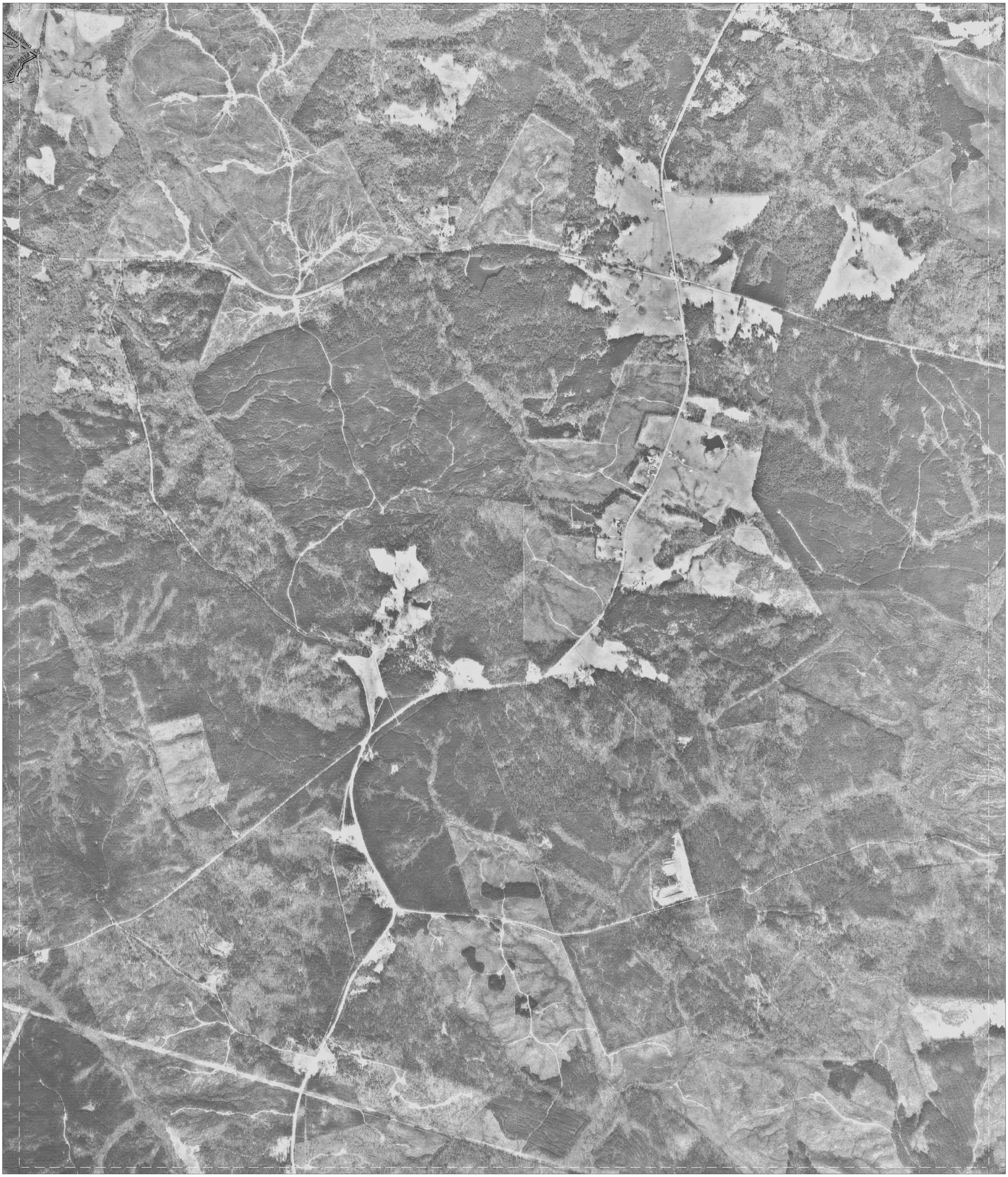
Joins sheet 53, Washington West SW

Joins sheet 54, Washington West SE

82° 52′30″ 82° 48′45″

33° 37′30″ 33° 37′30″

Joins sheet 64, Crawfordville NE



Joins sheet 66, Sharon NE

33° 33′45″ 33° 33′45″

82° 52′30″ 82° 48′45″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

52	53	54
64		66

52 PHILOMATH SE
53 WASHINGTON WEST SW
54 WASHINGTON WEST SE
64 CRAWFORDVILLE NE
66 SHARON NE

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LINCOLN AND WILKES COUNTIES, GEORGIA
SHARON NE QUADRANGLE
SHEET NUMBER 66 OF 69

Joins sheet 53, Washington West SW

Joins sheet 54, Washington West SE

Joins sheet 55, Washington East SW

82° 48′ 45″ 82° 45′ 00″

33° 37′ 30″ 33° 37′ 30″

Joins sheet 65, Sharon NW

Joins sheet 67, Cadley NW

33° 33′ 45″ 33° 33′ 45″

82° 48′ 45″ 82° 45′ 00″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

53	54	55
65		67

53 WASHINGTON WEST SW
54 WASHINGTON WEST SE
55 WASHINGTON EAST SW
65 SHARON NW
67 CADLEY NW

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LINCOLN AND WILKES COUNTIES, GEORGIA
CADLEY NW QUADRANGLE
SHEET NUMBER 67 OF 69

Joins sheet 54, Washington West SE

Joins sheet 55, Washington East SW

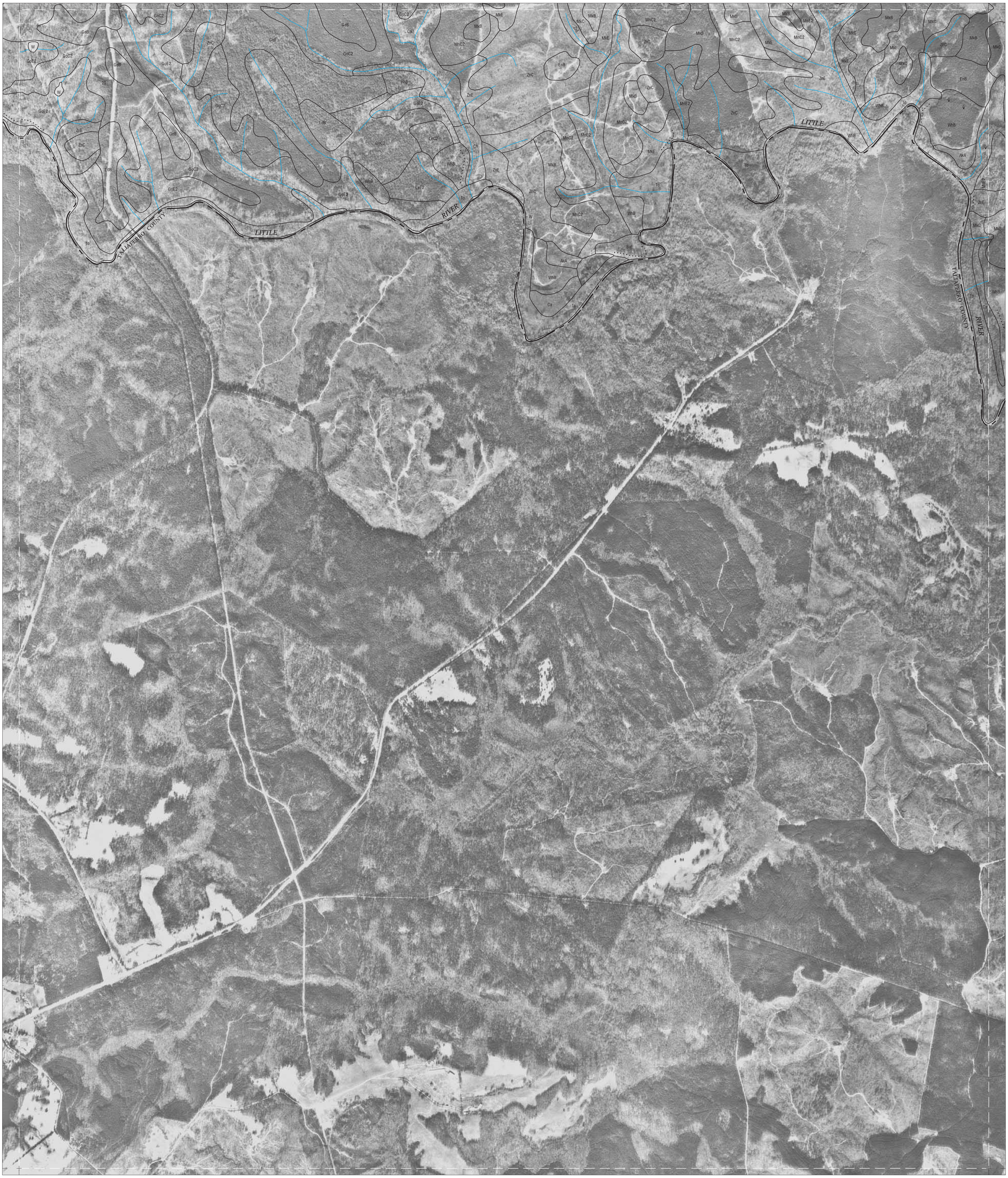
Joins sheet 56, Washington East SE

Joins sheet 66, Sharon NE

Joins sheet 68, Cadley NE

82° 45′00″ 33° 37′30″

82° 41′15″ 33° 37′30″



33° 33′45″ 82° 45′00″

33° 33′45″ 82° 41′15″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

54	55	56
66		68

54 WASHINGTON WEST SE
55 WASHINGTON EAST SW
56 WASHINGTON EAST SE
66 SHARON NE
68 CADLEY NE

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CADLEY NW, GEORGIA
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 55, Washington East SW

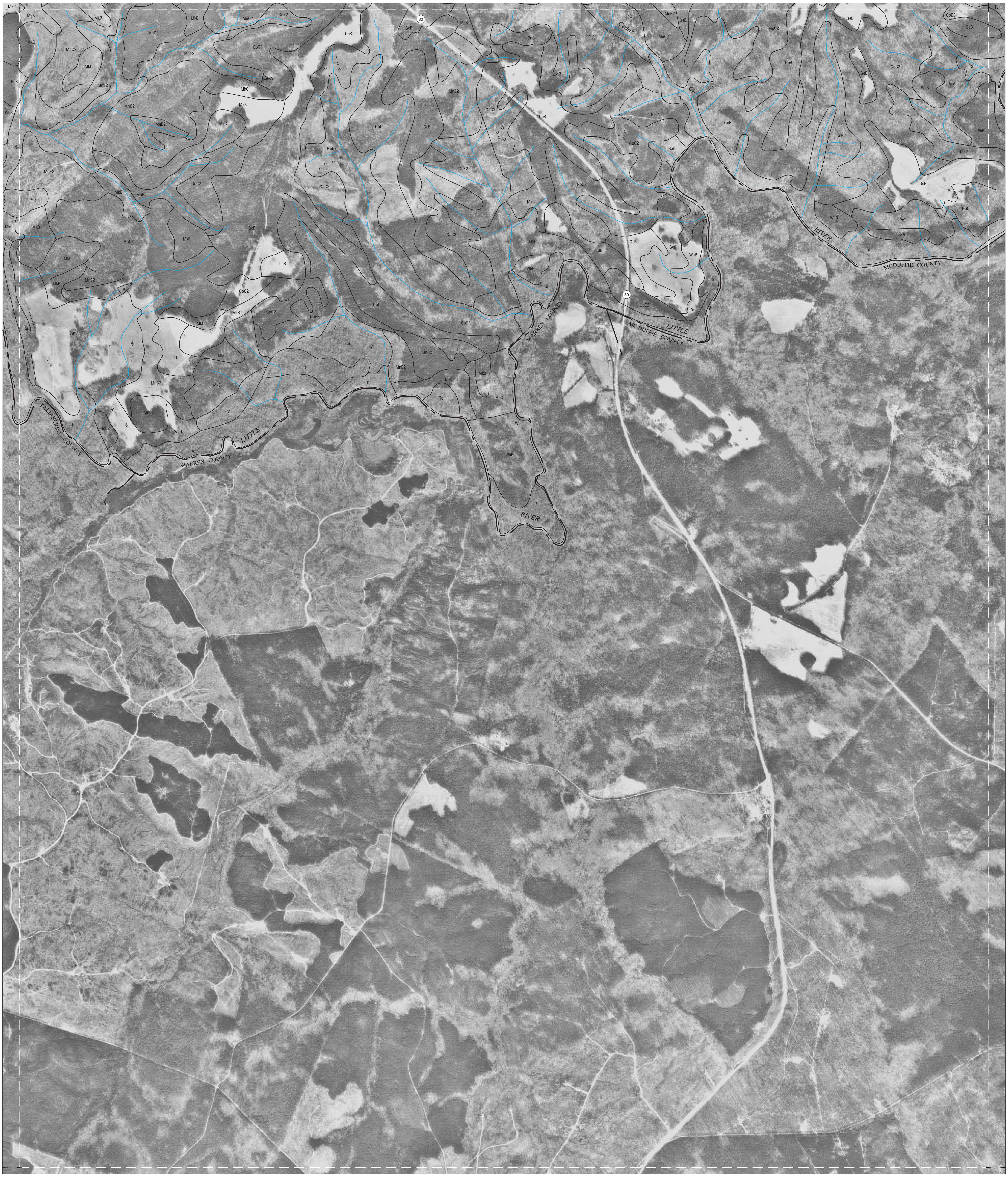
Joins sheet 56, Washington East SE

Joins sheet 57, Aonia SW

82° 41′15″ | 82° 37′30″

33° 37′30″ | 33° 37′30″

Joins sheet 67, Cadley NW



Joins sheet 69, Wrightsboro NW

33° 33′45″ | 33° 33′45″

82° 41′15″ | 82° 37′30″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

55	56	57
67		69

55 WASHINGTON EAST SW
56 WASHINGTON EAST SE
57 AONIA SW
67 CADLEY NW
69 WRIGHTSBORO NW

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CADLEY NE, GEORGIA
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 56, Washington East SE

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LINCOLN AND WILKES COUNTIES, GEORGIA
WRIGHTSBORO NW QUADRANGLE
SHEET NUMBER 69 OF 69

Joins sheet 58, Aonia SE

Joins sheet 57, Aonia SW

Joins sheet 68, Cadley NE

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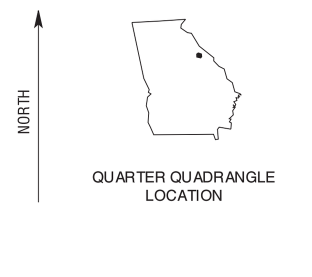
North American Datum of 1983 (NAD83). GRS-80 Spheroid Universal Transverse Mercator, zone 17.



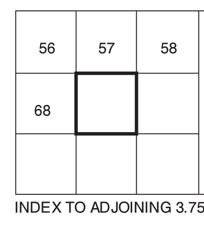
QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5
MILES

500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500
FEET

0.5 — 0 — 0.5
KILOMETERS



56 WASHINGTON EAST SE
57 AONIA SW
58 AONIA SE
68 CADLEY NE

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